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R. H. STINCHFIELD, *Managing Editor* SID NOBLE, *Editor*

Editorial Offices: 19 West 44th Street, New York

VOLUME XVI NUMBER SIX

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Agricultural and Scientific Bureau
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ALL OF A PROFESSOR'S PROBLEMS ARE NOT FOUND IN BOOKS.

Better Crops with Plant Food

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VOL. XVI NEW YORK, JUNE, 1931 No. 6

Jeff doesn't believe in long engagements

Come *to the* WEDDING

By Jeff McDermid

"THE road-house guest, he mixed the rest, to the tune of the saxophone," might be the modern version of the old jingle of our high school days, from the Rhyme of the Ancient Mariner. It pictured the wedding guest being detained by a voluble story-teller within sound of the loud bassoon and within sniffing distance of the bridal feast.

Elopements used to be daring escapades because it was so unusual for the swain and his inamorata to get very far from the front stoop by nine o'clock, which in all well-regulated, Victorian-era families was the cat-exit hour. To be sure, the turtle-doves might stray down as far as the corner drug store, where they had those rows of terrible, glaring globes filled with mystic colored liquids, and where they sold root-beer. Or may-hap there was a church "sociable" going on full tilt like a Venetian night, with strings of paper lanterns borrowed from the Bee Hive department

store hung on clothes-lines furnished and spliced by the Ladies' Aid.

This was about the only place a fellow could feed a girl ice-cream, but say, it was *ice-cream!* Thick and yellow, right from the farms that belonged to the parish and that would not quibble over a fat test when the meeting-house needed a new roof.

Mrs. Barnes and Mrs. Jenkins, in fussy, embroidered aprons waited on you and the Best Ever, without expecting a tip or being stingy with the soda-crackers. Or in winter time you would take her to the Odd Fellows fancy-dress ball or to the Good Templars bean dinner. Never strayed very far away from the corporate limits of the snug, little burg where you were fetched up, did you? And courtships were sort of foreordained affairs from the 'teens to the twenties; connived at and encouraged by sly but clumsy friends and parents; so much so that an elopement would not only have been wholly unnecessary but confounded ungrateful, especially to the parson who needed the five bucks for a new dictionary to keep up with the latest cuss words.

THE first girl I ever fell in love with was a bride when I saw her first—at five years old. No scandal to reveal whatever, just moonshine of memory! Mother had a bid to the church to see the couple enter the bonds. I was not invited, but I went just the same. It was curiosity, not cake, that led me thither.

The chief impression I got was wondering how old Cal Smithers, the stock-buyer with knobby nose and ragged whiskers, could happen to be the sire of the siren! He looked very awkward and foolish going up the aisle with his starched shirt and white kid gloves. The Vision glided beside him, and I cannot describe the Victim. The groom was "a personable young man of potential promise," the Clarion stated, but I affirm that mine eyes were scaled as far as he was concerned. 'Tis ever thus at weddings! He taught "commercial college" and the Beauteous One was one of his graduates whom he felt to be better suited to dictate than to take dictation. Anyhow, I can see her yet, and with one exception that occurred before a minister a few years ago in my shaky presence, no "other such an one" has stirred me quite so hard on the left-hand side of my vest.

I regret just one subsequent thing. Last year I visited the old town and somebody pointed out another somebody they said was this same girl. But the kid left in me denied the allegation.

BUT what I assayed to say in the preface was that elopements and abductions, kidnapping and hasty hegiras to thither and beyond by madcap lovers seem to be a trifle more common now than in the doily days. I mean both with and without the tie that rivets.

Or is it perhaps the avidity of the purple press that spreads these items luridly, while the motor mania enables Cupid or cupidity to play his part with a *dash* instead of a *dart?* Again, it may be that the drug stores are serving pickles and putrid literature instead of horehound candy and castoria; or the venerable old, ivy-wreathed wayside inn has become a shrieking half-way house to Hymen? No wonder the Ladies' Aid has started dancing and bridge lessons in the church parlors, to give a latter-day imitation of the lawn parties so katosh in the home-loving Epoch.

Once I went to New York. Absolutely! In between whirls of entertainment by our editorial accomplices, I took that standard bus-ride to see the Knickerbockers for a nickel. All the blessed distance from the Battery to Grant's Tomb I sat beside a couple who actually made frank and foolish love, just as we used to do when the gas-lights were turned out and her mother was snoring! Not only one couple, but several, mind you; and

(*Turn to page* 62)

Testing Pastures

By T. H. Blow

Springfield, Massachusetts

FIVE million acres of pasture land are now available for the 600,000 dairy cows in New England, not including Maine. This is one cow to approximately eight acres. That this area per cow can be reduced to one-half or one-third by adequate fertilization, and the remainder, which at the present time affords little more than exercise ground, can be turned over to growing trees, is not out of the reach of the New England farmer.

Three years' work on pasture tests scattered throughout this territory has made it possible to collect much information in regard to increases that may be obtained with various plans of fertilization. A real story has been told both from the standpoint of increased yields and the sod improvement following same. Pilot tests started in 1928 gave indications of resultant increases in yields, and commercial size demonstrations conducted in 1930 have given production and grazing data, proving that the smaller tests were indications in the right direction.

The following comparison of weights in green grass per acre for two years on 23 farms personally supervised shows a consistent improvement in yield. Where lime was used it was at the rate of 1½ tons per A.

Plot	Treatment per acre lbs.	1929 Yield lbs.	1930 Yield lbs.
1 Check (untreated)		3,565	2,370
2 0-16-0	600	4,429	3,679
3 0-16-0 (plus lime)	600	4,816	4,093
4 0-16-16 (plus lime)	600	6,206	6,210
5 8-16-16 (plus lime)	600	8,025	8,011

It will be noted from the foregoing table that the lesser treatments, plots 2 and 3, gave their greatest response the year after application. The sods showed this very strikingly in many instances. The more intensive treatments on plots 4 and 5, having potash and complete fertilizer respectively, kept up a consistent yield. The check plot continued to get worse, dropping back nearly 1,200 pounds per acre. These yields were made on representative sods on each plot with the second year's weights being taken on an area that had been grazed the year previous.

Unfertilized

400 lbs. 10-16-14 per acre applied April 1, 1930.

These pictures were taken May 16, 1930, on the commercial-sized test on Waveney Farm, Framingham, Massachusetts, where the fertilized sod returned the owner $122 per acre more than the unfertilized returned. There was an increase of 142 per cent in the first clipping.

The pastures in nearly every instance were of the permanent type, a few having been tilled in the past. The sods were of a great variety, ranging from the usual hard hack and cinquefoil to the better blue grass and white clover type. Each step up in treatment had some influence on the vegetation.

The phosphorus and lime combination added some vigor to the dormant grasses and clovers, but was far from outstanding. The addition of potash seemed to give the white clover a new lease on life, with the result that on the majority of the tests the clovers came along with enough stretch to give the cows something to wrap their tongues around. This is very important because many of our pastures are well populated with the clovers.

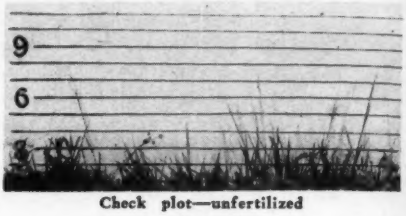
On the complete plot, the nitrogen induced the grass growth and gave earlier pasturage. However it was quite evident on this plot that unless the cattle were turned on early, or when the grass was not over four to six inches high, the growth of clover was inclined to be subdued. This was very noticeable inside the plot area that was fenced and not grazed during the season. Thus management as well as fertilization plays a large part in good pasture success.

On those plots having seed scattered on top of the sod, a good response was noted, as many of the moss knolls and bare spots were filled in. There is, however, much dormant grass and clover in our present pasture sods that with the proper nourishment would make a great response.

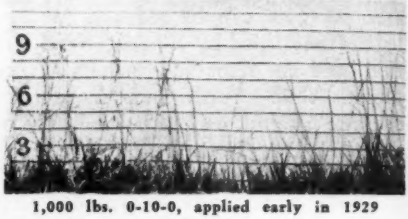
To lend support to the pilot tests and go a step further in securing actual grazing and production information, several commercial size tests of four acres or larger were sponsored by the various fertilizer companies, dealers, and materials people in the Northeast. Nine of these were sponsored by the N. V. Potash Export My., Inc., in the five states mentioned previously.

(*Turn to page 55*)

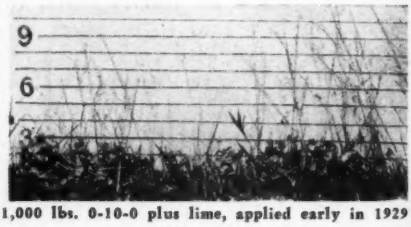
These pictures were taken July 3, 1930, on the farm of Ernest Anderson, East Morris, Connecticut. Note the complete change in sod growth with the more adequate fertilizers, 0-10-10 and 5-10-10. Using the check plot as 100, the values of the other plots are given.



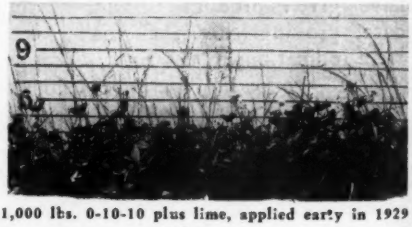
Check plot—unfertilized
Value—100



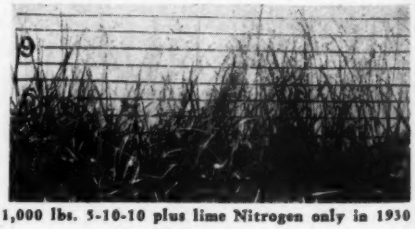
1,000 lbs. 0-10-0, applied early in 1929
Value—267



1,000 lbs. 0-10-0 plus lime, applied early in 1929
Value—333



1,000 lbs. 0-10-10 plus lime, applied early in 1929
Value—533



1,000 lbs. 5-10-10 plus lime Nitrogen only in 1930
Value—733

Kudzu

The South's Neglected Crop

By P. O. Davis
Editor, Alabama Polytechnic Institute

THE stepchild of Southern agriculture is kudzu. To date it has received little attention and considerable ridicule. Men who were considered authorities on agriculture have pronounced it a pest and advised farmers to "leave it alone." One writer went so far as to say to farmers that "if you plant one vine it will take your place."

Consequently farmers have been skeptical about it. They have been, and still are, literally afraid of it. In a figurative way they have guarded their farms and ordered kudzu not to enter.

In doing so they have condemned a rare crop. No other crop equals its combination of advantages. Furthermore, it is not a pest. Spread is easily prevented, and it can be killed with little effort.

But why should a farmer want to get rid of kudzu? He may want to discontinue it on a field, but certainly he does not want to destroy it entirely on his farm. Getting rid of it is like driving away a good friend.

The following are a few reasons why every farmer who can produce it should want it:

(1) It is an exceptional soil builder. It literally makes poor soil rich.

(2) It is a splendid hay crop.

(3) It is a dandy pasture.

(4) It is a splendid green feed for poultry.

The Experiment Station of the Alabama Polytechnic Institute at Auburn is ready to testify any time and anywhere that kudzu possesses the qualities and does the things named above. Director M. J. Funchess says "You cannot go wrong planting it."

The Alabama Station made a planting of kudzu in the early spring of 1916. It made little growth that year but covered the ground in 1917 and made a dense growth in 1918. In the spring of 1919 it was plowed under. From that time through 1929 the land where kudzu had been grown produced two crops of sorghum hay, four of corn, and seven crops of oats.

Builds Soil Fertility

The official records show that the residue from kudzu produced 2,536 pounds of sorghum hay per acre in 1919 and 1920. The average yield of four crops of corn following kudzu was more than double the yield on the plot that had not grown kudzu. The average yield of seven crops of oats on the kudzu plot was 7.9 bushels per acre more than that on the plot which had grown no kudzu. In 1929, 10 years after the kudzu was turned under, the kudzu plot produced 9.2 bushels of oats per acre more than the plot on which kudzu had never grown.

A crop which will do these things is entitled to be classed, without further examination, as a first-class soil builder. It is a legume, which means that it belongs to that group of plants which enrich land, if given an opportunity.

But what about hay? The South is well known as an area where farmers fail to produce as much hay as they need; and kudzu is a hay plant. To determine its hay value it was compared with alfalfa. It was found that in both dry and green form kudzu has a higher feeding value than alfalfa. Any farmer who has fed alfalfa has a feeling that it is good enough for his livestock, but yet kudzu is better. This is revealed by analyses of the two hays and verified by animals which have eaten it.

The kudzu experimental work of the Alabama Experiment Station is reported in Circular 57 entitled "Kudzu in Alabama." The authors are R. Y. Bailey and E. L. Mayton. They show, according to experiments, that kudzu produces hay abundantly. They present figures for six years, 1920-1925, inclusive, showing that the yield per acre of kudzu hay on the Alabama Station was 4,875 pounds. The figures include a low yield in 1925 caused by very dry weather from February to August.

Another area mowed twice in 1930, another very dry year, produced 5,647 pounds of hay. No fertilizer was applied to either of the areas mentioned.

Is Relished by Livestock

The department of animal husbandry and dairying at the Alabama Station has done experimental work with kudzu as a grazing crop. During the severe drought of 1930 the milk flow of dairy cows was maintained by changing them from grass pasture to kudzu a part of each day. No unpleasant odor or flavor of the milk resulted.

The Alabama and other experiment stations have found that all classes of livestock relish kudzu as a pasture as well as for hay. It may be used to great advantage and profit as a temporary pasture when regular summer pastures are dried up.

It is especially good to cut and feed poultry in dry weather. In fact it is "especially good" whenever available.

It is well to remember that kudzu cannot be planted in the spring with a view to producing hay that year. It should be allowed to grow at least two seasons before mowing begins, according to Mr. Bailey and Mr. Mayton. In case the soil is very poor three seasons may be needed before it is mowed.

Method of Planting

Kudzu seldom produces seed, hence it must be propagated from plants which are usually called crowns. They are formed by vines taking root at the nodes or joints. A good crown has a bud, or growing point, and well-developed, fleshy roots eight or ten inches in length. If crowns are planted before they dry out, practically all of them will grow, but if allowed to dry out or become very dry, a large portion of them will fail to grow. For this reason it is better to obtain crowns near where they are to be planted. However, this is not always possible.

It must be remembered also that plantings made one year will not produce crowns until two years later. Consequently propagation is rather slow. However, a well-established field produces a lot of crowns, and very extensive plantings can be made within a few years.

"One method of planting that has been used successfully," state Mr. Bailey and Mr. Mayton, "consists in digging holes about 12 inches deep with a posthole digger and setting the crowns, the roots of which have been cut back to about 12 inches in length, in these holes. The soil should be packed around the roots so that the bud of the plant is left slightly above the surface. Another method that has been used very successfully is the furrow method. In this method the crowns are set in open furrows so that the buds are just above the soil surface. This method requires less hand labor and has resulted in better first-year growth than the posthole method, due probably to the fact that the roots are planted whole without trimming.

"Crowns are usually spaced about

10 feet apart each way which requires 435 plants per acre. A good start may be made in less time by spacing five feet apart each way. This thicker spacing is desirable if plenty of home-grown crowns are available.

"The time of planting has not been studied thoroughly. Plantings from the 15th of February to the 15th of March have been very satisfactory. Kudzu plants make little growth the first year and may be smothered out by weeds or destroyed by rabbits. The young plants may be protected from weeds by planting some cultivated crop between the rows of kudzu the first year. If soybeans are used as the interplanted crop, the rabbits will feed on them and do less damage to kudzu plants."

It grows well on most soils. If given time it will get started and make a good growth on very poor and gullied land. It responds to rich land and fertilizer.

No one seems to know how far north kudzu will grow, but it appears now that it is limited, in the main, to the South. It does well in the extreme northern portion of Alabama, which is the north rim of the cotton belt. Perhaps it would do well farther north, but just how far no one is able to say.

It is a perennial known as "porch vine" or "telephone vine" and perhaps other names. It is used extensively as a shade plant around farm homes. From such planting field plantings are now being made.

That farmers generally are interested in the crop is revealed by the fact that the announcement that a new bulletin had been published by the Alabama Experiment Station brought inquiries from 40 States. Most of them asked for more information about it, but a general inquiry was for information as to how to grow it and where to get planting stock.

It is not improbable that the South will become a land of kudzu. It should be grown on every farm where it will grow, for it has too many advantages to be neglected. As more of it is grown there will be richer land, more and better livestock, and bigger returns from farming.

This old Kudzu vine made an enormous growth during an experiment at Auburn, Alabama.

The Pickard Family—everyone a musician and true interpreters of the widely loved melodies of the Old South. Heard in many farm radio programs, the Pickard family is ideally fitted to bring to the radio audience a true expression of homely Dixie songs and dramatic sketches. They come direct from the Tennessee hills where the songs they now play were dear to their hearts since childhood. Left to right: Ma, Bubb, Ann, Dad, and Ruth.

Behind the Farm Radio Microphone

By Jerome J. Henry

National Broadcasting Company, Inc., Chicago, Illinois

EVERY farmer in the United States may attend the same "school" and receive a store of agricultural knowledge limited only by what remains to be discovered by the leading farm specialists of the country. This school of the air knows no bounds in reaching every nook and corner—every homestead and every class no matter where the individual may be in the 3,000-mile expanse of Uncle Sam's farming territory.

Those of us who have learned to rely upon weather reports, timely crop information, market news, statistics, and countless other things by radio need no introduction to this wealth of material. Those who have not shared in these benefits may obtain them at will simply by "tapping" the air with a radio receiving set.

The information is by no means limited to routine reports and statistics, nor is its availability restricted to

farmers. All sorts of timely features are covered by radio stations throughout the country and heard by all classes of people interested in the agricultural industry.

Of particular interest to agriculturists, the largest and most expansive broadcast is the National Farm and Home Hour originating in the Department of Agriculture and Washington studios of the National Broadcasting Company, the Chicago studios of the company, and occasionally the New York studios. A similar branch of the Farm and Home Hour was inaugurated on the Pacific coast January 1 to serve Western farmers in the same way that the National Farm and Home Hour now serves farmers in the East, South, and Midwest.

The National Farm and Home Hour broadcast daily over a network of 37 stations and the Western Farm and Home Hour over seven large Pacific coast stations give a complete coverage of the nation. A typical Farm and Home Hour program offers 20 minutes of news, information, talks, and other vital messages interspersed with musical features planned to please country folks.

Morse Salisbury, chief of radio srevice for the United States Department of Agriculture, has the enormous task of arranging the daily programs of the National Farm and Home Hour.

Musical programs are carefully handled and are the result of studies to learn the types of music and entertainers preferred by rural listeners. A recent statement by Frank E. Mullen, director of agriculture for the National Broadcasting Company, illustrates the appreciativeness of country

An outstanding float of the National Corn-husking Contest parade. Radio listeners heard a vivid description of this and other parts of the parade direct from the scene of the event in northwestern Kansas.

folks for the better classes of music. "Farmers no longer prefer the 'rube' or 'hill-billy' type of music, but are in favor of the selections by foremost composers," he stated.

Contained in the broadcasts for the national radio audience are music and special numbers. Primarily, however, the programs contain sufficient news and information to place the farmer on an equal basis with the business man in obtaining facts concerning his industry.

Market and weather summaries perform a real service, amply described by the words of C. F. Marvin, of the Weather Bureau, who said in a recent radio talk:

"My good friends, I know that the weather has misbehaved shamefully during the 1930 growing season, and that the unusual extremes of heat and lack of rain have brought on serious losses. In a joking way the Weather Man is charged with at least part of the responsibility for all this, and perhaps, he is not entitled to address you as his good friends. However, down deep in your hearts you know he is not to blame, and I confidently believe my words of friendly greeting set in vibration within those who hear me a responsive chord of friendship for me and my staff, notwithstanding the human limitation surrounding our efforts to serve you."

This message substantiates the spirit in which the vital news is offered the public by the United States Department of Agriculture radio service.

An example of feature talks heard in the National Farm and Home Hour was the soil improvement series of January, 1931. Six vastly important soil and fertilizer subjects were discussed by members of the Bureau of Chemistry and Soils. They were: "The Soil Survey and Your Farm," "New Knowledge of Fertilizers," "New Knowledge of Potato Fertilizers," "What You Should Know About Concentrated Fertilizers," "Working With Soil Organisms" and "New Knowledge of Soil Amendments." In addition to hearing these talks they are available for reading by requests addressed to the Department of Agriculture.

Two unshucked "nubbins" who added color to the 1930 National Corn-husking Contest, Norton, Kansas, and were a real attraction in themselves.

Messages of the Federal Farm Board are broadcast over the nation-wide network every Friday noon, the time, 11:30 a. m. to 12:30 p. m., C. S. T., having been chosen for the National Farm and Home Hour in order to reach the greatest number during the dinner period.

It is difficult to estimate the value of the Department of Agricul-

(*Turn to page* 59)

More Plant Nutrients in Fewer Pounds

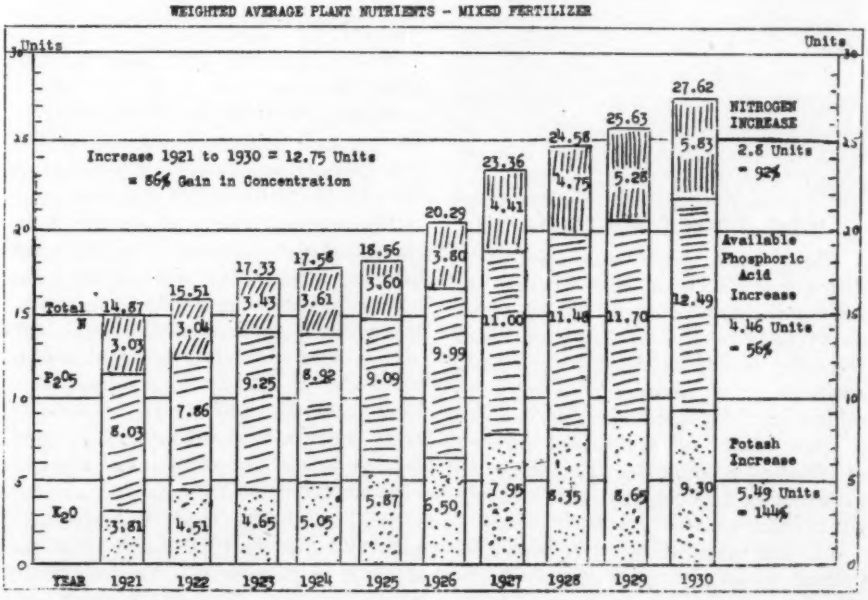
By M. H. Lockwood

Eastern States Fertilizer Service, Eastern States Farmers' Exchange, Springfield, Massachusetts

Reprinted from the April Eastern States Co-operator

WILL fertilizers containing 40 units of plant nutrients be as common in 1940 as 20-unit mixtures were in 1930? If the record of the past 10 years is any guide, this question may be firmly answered "yes." And this is particularly true as far as Eastern States members are concerned. In fact, it would not be surprising if the average plant nutrient content of mixed fertilizers distributed by the Exchange reached the 40-unit mark by that time.

The accompanying chart, showing the average plant nutrient content of Eastern States mixed fertilizers from 1921 through 1930, records, in detail, the trend since Eastern States Fertilizer Service began. It will be seen that the average analysis of mixtures, 14.87 per cent plant nutrients in 1921, has nearly doubled in 10 years, reaching 27.62 per cent in 1930. If all the mixed fertilizers distributed by the Exchange in 1921 had been mixed together and analyzed, the analysis would have shown approximately a 3-8-4 grade of goods. At that time the old



2-8-2, 3-8-4, and 4-8-4 ammonia basis grades were popular. That was during the period when the 4-8-4 grade led all others in tonnage here in the Northeast. Since then the 2-8-2 has almost disappeared from use. In fact, in so far as Eastern States fertilizers are concerned, it was dropped from the list several years ago, and it is five years since any of the three grades mentioned have been included among Eastern States fertilizers.

The next step was to the 3-12-3, 5-10-5, and 5-8-7 ammonia basis grades. Those have come and gone with their high analysis partners such as the 4-16-4, 8-16-8, and 10-16-14; the latter having been introduced by the Exchange in 1926 and 1927.

Since 1928, Eastern States fertilizers have all been graded on the nitrogen basis with ordinary analysis mixtures such as 4-8-8, 4-10-6, and 4-12-4, all totalling 20 units and their high analysis ratio equivalents 8-16-16, 6-15-9, and 6-18-6, containing 30 and 40 units.

Beginning in 1929 the Exchange has distributed still higher analysis mixtures known under the trade names Ammo-Phos-Ko and Nitrophoska containing 45 to 60 units of plant nutrients. With each step upward for 10 years past it seems entirely likely that the average content of Exchange mixed fertilizers may be as high as 40 units by the end of another 10-year period.

What These Changes Mean

Along with other industries, fertilizer manufacturing and farming are undergoing some radical changes when one stands back and looks at them from the standpoint of decades. And, although it is common for some to reflect on "the good old days," there is more cheer and progressive interest in adopting sane income-increasing improvements and looking ahead at the advantages which come with them.

As the number of livestock decreases, manure supplies decrease. The smaller supplies of manure indicate probable increases in the ratio of nitrogen and potash in fertilizers. This trend is already evident in the chart of average plant nutrients. While potash has increased rapidly and is a relatively inexpensive nutrient, nitrogen has risen less rapidly, probably because of its higher cost. Owing to present production capacity for both by-product sulphate of ammonia and carriers of synthetic nitrogen, together with increased efficiency in natural nitrate refining processes, we may look for lower nitrogen prices for the future. Even with the limited supplies of manure, larger quantities of phosphoric acid can be used with profit as a manure supplement. And even in carriers of phosphoric acid we can see signs of improvement.

Both ammonium phosphate and ammoniated superphosphate seem to have at least slightly superior value when compared with older materials, such as sulphate of ammonia and ordinary superphosphate. They are an improvement mechanically over the older materials. According to tests, the phosphoric acid in them seems to have a higher penetrating ability than that in ordinary superphosphate.

About Minor Elements

We are learning that some of the minor elements have a material effect on crop production under certain conditions, and they are being introduced into the high analysis fertilizers in definite quantities when needed.

The user is paying less for his purchased plant nutrients, hauling and handling less bulk, and cutting his production costs as he finds that machinery will apply a smaller poundage of fertilizer accurately enough, and as he finds, as Eastern States members have, that 40- and 60-unit fertilizers raise as large a quantity and as good quality as did the older, 12-, 15- and 20-unit fertilizers.

With a change from 15-unit mixture to 28 in the past decade, it is not difficult to picture a further climb to 40 units during the next 10 years.

The Inquiring Mind *and the* Seeing Eye

By Dr. A. S. Alexander

University of Wisconsin

ON March 9, 1930, the portrait of Professor William Carroll Latta was, on the occasion of his eightieth birthday, presented to Purdue University, LaFayette, Indiana, by the Alpha Lambda Chapter of the Epsilon Sigma Phi, in cooperation with associates, faculty members, former students, and members of rural organizations.

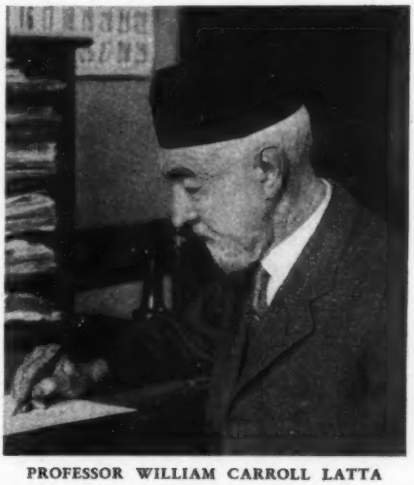
A like honor was done Professor James Troop on January 14, 1931, his portrait being presented to Purdue University by the Indiana Horticultural Society, members of Acacia fraternity, faculty members, former students, and friends. Professor Troop's seventy-eighth birthday was on March 14, 1931. Both portraits were painted by Robert W. Grafton, the famous Hoosier artist.

Years of Service

This well-merited honor was shown Professor Latta in recognition of 48 years of service to Purdue University, from 1882, and he is still active. Professor Troop was honored in recognition of his 46 years of service as professor of horticulture, from 1884 to 1912, and of entomology, from 1912 to date.

Forty-eight and forty-six years of continuous service! That is a long, long time, Gentlemen. It makes Professors Latta and Troop real pioneers, and we rejoice when such men are honored. Too often their services are lightly regarded or forgotten; yet they blazed the way for others to follow and carry on the work with the marvelous resources and improved equipment of the present day.

When we look with admiration at the great dome of a towering State Capitol building, we are apt to forget the men who labored in the dark and damp of the earth to form a firm



PROFESSOR WILLIAM CARROLL LATTA

foundation for the imposing edifice. When we watch a great mogul engine snort out into the night, drawing a long train of magnificent cars bound for the Pacific Coast, we praise the grandeur of the modern railway, but seldom remember the "empire builders" of the past. So, too, when we go the rounds of the twentieth century agricultural college and experiment station, noting with astonishment its wonderful buildings and wealth of appointments in lecture halls, labora-

tories, libraries, judging pavilions, barns, and far-flung fields, we admire and applaud these evidences of progress; but we sometimes neglect to give credit to the pioneer builders of it all.

Hats off to the many brave, persevering, undaunted, far-seeing men, of the Latta and Troop type, who met and surmounted all sorts of difficulties and deterrents in their struggle to make agricultural institutions of teaching and research of inestimable scientific and practical value to the people.

First Faculty Members

In 1882 Professor Latta was the sole member of the agricultural faculty at Purdue. He acted as instructor in agriculture and superintendent of the University farm. At his invitation Professor Troop went to Purdue University in 1884, as professor of horticulture and entomology, and horticulturist and entomologist of the Experiment Station. These two made an effective team and saw expert after expert added to the faculty, until it became a mighty organization for efficient service.

Professor Latta was born at Union Mills, Indiana, March 9, 1850, raised on a farm, and educated in the local schools. Then he attended Michigan Agricultural College, where he received his Bachelor of Science degree in 1877, and his Master's degree in 1882. In 1883, he was made full professor of agriculture at Purdue, and acted in that capacity until 1911. From 1889 to 1923, he was superintendent of Indiana Farmers' Institutes, being appointed to that position immediately after the passage of the Farmers' Institute Act in 1889.

The Institutes under his able supervision aroused a wide interest in agricultural education among the farm folk of the State, which led to legislative provision for the erection of Agricultural Hall in 1901, the first State appropriation for agricultural research in 1905, and the appropriation for the Experiment Station Building in 1907. Later, the Institutes were largely instrumental in securing the passage of the Clore Act establishing the Department of Agricultural Extension in 1911. During the 35 consecutive years Professor Latta has supervised the Farmers' Institute work of Indiana, it also has exercised a potent influence in advancing agriculture, enriching rural life, and promoting community cooperation.

In 1883, Professor Latta began a number of soils and crops field plot experiments. Five years later he laid out the first permanent soil fertility field experiments at Purdue. This inaugurated a system of research which was considered one of the best in the country at that time. These original lines of experiments stand, today, as a monument to the foresight and vision of Professor Latta. He was also the pioneer in the field of agricultural extension in Indiana.

Trail Blazer and Pioneer

Of him, Dean J. H. Skinner has said: "Professor Latta is a capable, sympathetic teacher, wise counsellor, and a good friend of all his students. He has been a trail blazer and pioneer in the field of improved agriculture and rural education. He organized the School of Agriculture, and very wisely laid out the first administered four-year course leading, in turn, to the bachelor's and master's degree. He conspicuously directed the administration of the school until 1907. He has truly left a great impress upon the local community, Purdue University, and the agriculture of Indiana."

During the last few years, Professor Latta has devoted much time to the preparation of the manuscript for a "History of Indiana Agriculture." His services to agriculture and civic and religious activities have been unselfish and unremitting.

Religious matters always have been to him of supreme importance. As a life-long member of Trinity Methodist Church of LaFayette, he has but once in 49 years missed the Easter service, and that was due to sickness. He is a

trustee in every church activity, makes many sick calls, and contributes freely to the Y. M. and Y. W. C. A. His greatest interest in church affairs is to establish, if possible, a cooperative church for Purdue University, as he sincerely believes that worshippers of all denominations should unite in one large church. To this end he has held conferences of all denominations, and another is to be held in the near future.

PROFESSOR JAMES TROOP

Professor James Troop was born at Bennington, New York, March 14, 1853, and reared on a farm. He obtained his rudimentary education in the district schools, then entered Michigan Agricultural College, and there was granted the degree of Bachelor of Science, in 1878. The next year he spent in post-graduate work at Cornell University, and the winter following he studied at Harvard. In 1880, he returned to Michigan Agricultural College, became a member of the agricultural staff, and there received the Master of Science degree, in 1882. Two years later, he went to Purdue as an instructor. In that institution his duties were manifold. He taught horticulture, entomology, forestry, economic botany, and even veterinary science. An instructor had to be an all-round man in those early days. Teachers in other agricultural colleges were similarly versatile, and had to "change off" as occasion demanded.

Emergencies often arose in those days, and were ably met. During Professor Troop's first winter at Purdue, the mercury fell to 34 degrees below zero and killed all of the apple trees in the LaFayette region. Orchardists were dismayed and began looking for varieties that might survive severe winters. This need led Professor Troop to initiate, in 1886, the first horticultural experiment work at Purdue. He planted a hundred or more imported Russian apple trees. Some of them solved the problem. They became summer and autumn varieties in their new Indiana home, and proved valuable as stock for planting in the Northwest.

In 1886, Professor Troop obtained from the Imperial Agricultural College of Japan a quantity of valuable native fruits and seeds, which made a notable contribution to the already large display in the Agricultural Department at Purdue.

In 1885, Professor Troop's bulletin descriptive of over 60 varieties of shrubs found on the college grounds led people to select more suitable plants for use in the landscaping of their home grounds. That year Professors J. S. Budd of Iowa Agricultural College and W. J. Greene of Ohio Agricultural Experiment Station were his guests at the time of the Agricultural Conference, in which they took a leading part. The counsel of those noted

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Potash-Minded

By Luther Fuller

General Agricultural Agent, C. & E. I. Railway, Danville, Illinois

"POTASH-MINDED" is a term that can be applied to an increasing number of Illinois farmers each year. Many of these men discovered that their plan of soil improvement, which included lime, phosphates, and legumes, was considerably improved and hastened by the use of potash, either in straight form or with complete fertilizers.

Field demonstrations with various crops on different types of soil have shown some remarkable results from the use of potash and commercial fertilizers containing potash.

To illustrate, F. L. Kinney, one mile south of Momence, Illinois, in 1930, obtained 41.5 bushels of wheat per acre on brown sandy loam where 315 pounds of 3-18-9 were used, compared with 30.6 bushels from 315 pounds of 3-18-0, and 21.4 bushels from the check.

R. C. Knox, Morrison, Illinois, in 1929, grew 91.4 bushels of corn per acre on brown silt loam where 130 pounds of 0-14-14 were used, 85.9 bushels from 130 pounds of 0-14-6, 75.4 bushels from 130 pounds of 0-14-0, and 76.8 bushels from the check. Here the response is apparently due to the potash in the fertilizer.

W. B. Huffaker, five miles south of New Berlin, Illinois, in 1929, secured 73.5 bushels of corn per acre on brown silt loam where 135 pounds of 0-14-14 were used, 83 bushels from 135 pounds of 0-14-6, 68 bushels from 135 pounds of 0-14-0, and 57.6 bushels from the check.

The use of potash alone gave very profitable results on peat and black sandy loam. Walter DelHotel, West Brooklyn, Illinois, in 1928, grew 51.5 bushels of corn per acre on black sandy loam where 100 pounds of muriate of potash were used, and 17.4 bushels on the check.

This picture was taken during one of the stops of the soil-testing train.

J. T. Johnson, Normandy, Illinois, in 1928, grew 60.4 bushels of corn per acre on peaty loam where 300 pounds of muriate of potash were broadcast, and 13.5 bushels on the check.

Henry Lauer, Prophetstown, Illinois, in 1928, grew 54.1 bushels of corn per acre on black sandy loam where 108 pounds of muriate of potash were used, and 28.8 bushels from the check.

These results

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Farmers came from miles around to see the cotton-dusting demonstrations.

Prepare *for* Weevils

By C. H. Brannon

Extension Entomologist, North Carolina State College of Agriculture and Engineering

COTTON growers are urged not to wait until the last minute to prepare for the boll-weevil fight this season. Last year we experienced a very dry season which was on the whole unfavorable for heaviest weevil damage. If we have frequent rains during the growing season this year, particularly in July and August, we can look for very severe damage by the boll-weevil.

There is a great deal of discouragement about the price of cotton, but *if cotton is worth growing at all, it is worth protecting from boll-weevil damage.*

It would be obviously foolish to do away with fire insurance because property values have shrunk. It is false economy to raise cotton for boll-weevil food regardless of the price of cotton. Cotton farmers should consider as never before, growing only the acreage which can be properly treated for boll-weevil control. If weevils appear in large numbers and control is properly used, it is an excellent investment. We should not consider blindly the extra cost of weevil control without considering the cost of weevil damage each season and being prepared to dust quickly at the proper time. If weather conditions do not permit heavy weevil damage, machines and poison do not deteriorate if given suitable protection.

Reports showed more weevil activity in North Carolina than in any other States in the Union last year.

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Speaking of

Publicity

By W. H. Darrow

Extension Editor, Agricultural and Mechanical College of Texas

PUBLICITY is something taken seriously by its sponsors, and with a grain of salt by the public. Stated another way, "publicity is your side of the question made public, propaganda the other fellow's." It is unfortunate there is enough truth in the business that these characterizations should have been made. Because these views are rather commonly held to varying degrees by many people, especially those given to some precision of thought, publicity is not always regarded by farm and home demonstration agents as the handmaiden of Extension. Yet it should be, and therein lies the essence of this story.

Viewing publicity in its broadest sense—of making known—at least half of Extension is publicity. The foundation is, of course, the farm or home demonstration which develops thinking men and women as they work out their successes in field or barn or home. To work the rural revolution to which Extension folks are devoting their lives, the number and influence of these demonstrators and their demonstrations must be multiplied. That is why meetings are held, and tours bring the neighbors to view the accomplishments, and why exhibits are placed in fairs and store windows, and why the simple news story is carried in the local newspaper. All this is publicity. The newspaper branch of it is selected for special treatment here because it is the form that gives the greatest effect with a given expenditure of time and effort.

Victimized it may be by the army of press agents who swarm America (some of them in collegiate uniforms) and erring sometimes in its selection of and emphasis to news, the press remains a power in the land. I don't believe all Extension agents realize the extent to which this is true. I shall not attempt to prove the point, but merely to suggest that those who would popularize ideas give some consideration to the greatest popularizer of all. Allies are often helpful.

It Can Be Done

One of our Texas county farm demonstration agents convinced himself of the power of the press in a unique way. "It can't be done," everybody told W. O. Logan when in beginning county agent work in Knox county a few years ago he proposed a campaign to eradicate coyotes. For two years community and county-wide mass-meetings had failed in getting concerted action.

"But it's got to be done," he replied, "you can't develop a paying livestock industry with coyotes running loose." He was informed that he was on a cold trail and that he would soon find that no one would come to his meetings.

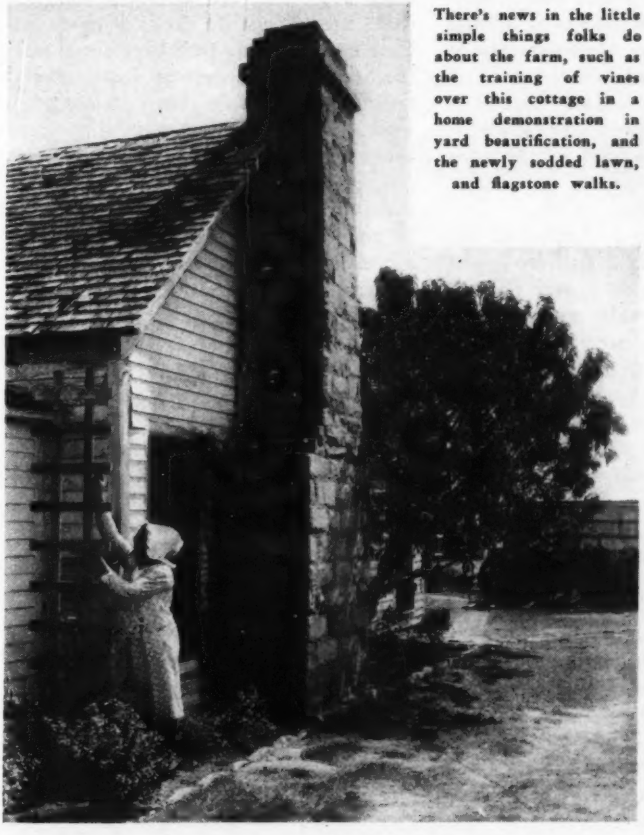
But not a meeting was held. Beginning in mid-August Logan inserted in his news notes in local papers each week such items as this: "John Smith of Vera lost two sheep from coyotes last Thursday," or "Mrs. Albert Jones of Gilliland had her chickens raided by

coyotes last week and reports 10 missing," or "A fine Hereford calf belonging to Jack Eberly was killed Saturday night on his ranch near Truscott."

From August to January at least one such item of news was reported in the newspapers every week as the attacks occurred. No advice, no preaching, no articles on how costly coyotes are, no suggestion that they could be killed out—nothing but straight news, facts without opinions.

January first he mailed a letter to 40 representative ranchers stating that if they wished to kill out their coyotes poison bait could be had for a certain price per bait, that it would take from 50 to 100 baits per section, and if interested in poisoning to notify the agent. *Thirty-nine* immediately replied, the commissioners court bought the baits for resale, a U. S. Biological Survey man gave a demonstration, and the howl of the coyote was heard no more that year. A year later a few returned, but the poisoning was done by farmers and ranchers without aid of the agent.

I should also like to say something about the country newspaper as an institution because I have encountered so many people who regard it as a joke. To assume an amused superiority to it, or worse, a studied indifference, is regrettable in the cities and town, deplorable in the open country, and unforgivable in Extension circles. The extent to which this view is held is, I think, a measure of the triumph of urban over rural civilization. If the Extension division has been recruited to urbanize the country, the sooner it is mustered out the better, in my opinion. Relief in the wholesomeness of country life and country institutions, and faith that a satisfactory and cultured rural civilization may be achieved is requisite to understanding and understandable Extension work.



There's news in the little simple things folks do about the farm, such as the training of vines over this cottage in a home demonstration in yard beautification, and the newly sodded lawn, and flagstone walks.

Russell Lord has expressed these ideals well. He used to be an extension editor at Ohio State University and is now associate editor of *Country Home*. He says, "No other country in the world has anything like our country or community newspapers. They are as typically American as the rocking-chair, the town meeting, or apple pie. They are the expression

of our democracy, and wherever it is that our democracy is strongest, they are strongest.

"This is no new thought, but apparently it is one that only lately is coming generally to be recognized in America. It has a bearing on our theme. More than half of the community newspapers in the United States are put out in the 12 agricultural States of the great Middle West. Such community newspapers may neglect agriculture—often they do—but they cannot help depending in great measure on that community consciousness by which the rural town and its outlying farms are drawn together and on that democratic simplicity and simple neighborliness which never comes to full flower far away from the soil.

Speaking of Derision

"Our home paper makes funny mistakes sometimes. Sometimes it admits to its columns the communications of correspondents which without at all intending to amuse, do so. But it is far from being something to laugh at, as a whole; not, at least, in the tone that the big city papers sometimes laugh at it, scornfully.

"Perhaps the most futile of all things is to tell people what they ought not to laugh at. This is not the intention here. We really are not discussing humor at all; we are discussing derision. And we are not even saying that you ought not to deride your home paper and the community which it reflects as accurately as any mirror, if you really feel that way about it. Only, do you really feel that way?

"It is an attitude which, happily, is going out of fashion. The whole community-development movement in America represents a throwing-off of all such foolishness; a realization that city standards are no adequate measure for rural communities and their institutions; a determination proudly to work with what is our own here at home, and with these things to make our home community as good a place to live as any on earth, and for us the best . . .

"Of small, yet great, matters is your home paper the faithful historian, and the only one. Not to respond to and to support such a paper, not to recognize it as a mighty force for community cohesion and progress, and not to try in some measure to repay these services appear, to say the least, both ungracious and unimaginative."

We had a news-writing contest for county and home demonstration agents in Texas last year. One hundred fifty-three entered, and 47 made county exhibits of their local material at the annual Extension meeting. The judges said the news content of the stories written by agents exceeded those written by reporters and editors. That is not strange for it is the agent who has the background and who should place the interpretations on results achieved. It strongly suggests that agents should not delegate all their news writing to others but should furnish local papers at least several short interpretative result stories each week. In Texas we suggest that every agent write each week two typewritten pages double-spaced, containing three to five short stories in addition to any notes on meetings, tours, exhibits, etc., he may give direct to reporters.

The Nose for News

Granted the vision and the will, the writing is not hard, agent opinion notwithstanding. I have found agents are apt to suffer from two ailments. The first is difficulty in recognizing news, and the second the tendency to use the news story as a medium for expressing one's own opinions.

It is said that some folks can fall in the river and come out dry. Similarly some agents can wade through a county-full of constructive, community-building news and come to the office dry. This lack of the nose for news can be overcome. It is simply a matter of getting outside yourself

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The judges who picked the prize-winning scrapbooks were (left to right) Dr. C. E. Millar, Soils Department, Michigan State College; Burt Wermuth, Editor of the Michigan Farmer; E. E. Gallup, State Supervisor of Agricultural Education; and W. W. Johnston of the English Department, Michigan State College.

Potash Scrapbooks

By I. J. Mathews

Winamac, Indiana

PRESIDENT R. S. SHAW of Michigan State College, writing a special message to Michigan high school boys entered in the potash scrapbook contest, said:

"Some of the rarest gems of thought are frequently found in rather secluded places, in the press, in long, wordy addresses, and in published books. This applies also to written expressions relating to agriculture in all of its various phases. The human mind cannot record them all and must needs rely on some form of reference system. A classified scrapbook or clipping file may serve as a means of preserving and rendering available a great mass of material of much value to an agricultural student which would otherwise be unavailable."

"I never realized that there was so much known about potash or that it is so important a plant food," said redheaded Archie Potter, a sophomore in the high school at Mesick, Michigan, whose scrapbook was truly "exhaustive." "The businessmen around town have been calling me 'Potash' ever since I won the free trip to the Future Farmers' Association convention at East Lansing, with my scrapbook."

"Harold Hulburt was about to quit school," said Willis Campbell, teacher of agriculture at Cass City, Michigan,

"when this potash scrapbook announcement came out. But he got interested in this one thing and now he's going on and finish school. Where he dug up all the potash material he did is more than I can figure out."

Harold Hulburt's scrapbook contained some photographs showing how various crops on the Hulburt farm responded to fertilizers containing potash. In one instance he records, "A dollar's worth of potash brought in more than four dollars' worth of crop."

Wayne Wibirt started his with a photograph of the "Potash Pays" alfalfa demonstration on the Keystone Demonstration Farm north of Howard City where the alfalfa letters are still plain the third spring after the potash was applied.

Emmer Mathias asked George Grantham, research assistant in soils at Michigan State College, to write an introduction to his scrapbook.

Both Leslie Hughes and Frank Denning worked out a special design for the covers of their scrapbooks.

As the potash scrapbook contest proceeded, it came to be considered highly both by the educators of the State and the boys themselves. The relation between making an exhaustive scrapbook on an important subject like potash, which is receiving constantly increasing attention each year, to the life of the community in which the boys lived was noted.

Every Book, a Scrapbook

The boys learned that every book we now recognize as such was once a scrapbook, from the dictionary down to the latest novel. The dictionary is but a scrapbook of the words which various races and peoples have invented in their effort to establish a language. The novel is merely a scrapbook of the experiences and ideas of the writer, woven into a plan and presented as the thoughts or words of characters in the story.

Every book is a scrapbook of past experiences and experiments. The collector often displays so much initiative and art in arranging the subject matter and classifying the topics that the reader never suspects that in the beginning these were only scraps or odd bits of information.

Each scrapbook sent in illustrated one or more of the values of keeping a scrapbook, as pointed out by E. E. Gallup, state supervisor of vocational agriculture in Michigan high schools, and Burt Wermuth, Editor of *The Michigan Farmer.*

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These seven Michigan boys, winners in the scrap-book contest, were the guests of N. V. Potash Export My., Inc. at the Future Farmers of America convention at East Lansing, April 30—May 1. Left to right, back row—Wayne Wibirt, Reed City; Clair Gregory, Harbor Springs; Harold Hulburt, Cass City; and Glen Slucter, Hermansville. Front row—Frank Denning, Jonesville; Leslie Hughes, Jonesville; and Emmer Mathias, Mancelona.

The "Arrowhead" at School

By M. J. Thompson

Director, Northeast Minnesota Experiment Station, Duluth, Minnesota

TURN to your map of Minnesota. The northeastern third of the State, north of Lake Superior and shaped like a wedge, is called the "Arrowhead Country."

Duluth, a city of 112,000 is its metropolitan center. Just outside Duluth lies the Northeast Minnesota Experiment Station, a frontier outpost of the University.

This station serves the cut-over country, once an empire of evergreens, but now embracing more than 30,000 farm homes. The station is 18 years old. The great forest fire of 1918 devastated it, a unique experience in experiment station history. As a consequence, it is today a "Prairie Farm," nestling in the Amity Valley, typical of the countless cozy coves along the North Shore.

The first event on the agricultural calendar of the Arrowhead Country each year is the three-day institute, held about April first at the experiment station. This year, the "Tenth Annual Arrowhead Institute" was an elaboration of the old-fashioned institutes that marked the early days of extension work, modified to its regional home. The new auditorium built last year to house it is significant of its influence and growth.

The Arrowhead Institute is administratively a university function; practically, it is a regional enterprise, the "Agricultural Clearing House" of the Arrowhead. Everybody helps. Teamwork puts it over.

Important in this teamwork are the extension force, the 13 agents and farm bureaus of 7 counties, an area as large as the three southern New England States; the Duluth Council of Agriculture, the rural working unit of the Duluth Chamber of Commerce; the Arrowhead Association, working as a regional unit; and the St. Louis County Club, a federation of the Women's Clubs, Commercial clubs, and farm clubs of an area as large as Connecticut. The press, as represented by the Stock & Dairy Farmer, the Duluth Herald, and News-Tribune, provides publicity and financial aid. Finally there is the active help of large industrial establishments, State-wide breed and crop associations, farm clubs, representative citizens of town and country, all functioning through the advisory committee of the Northeast Minnesota Experiment Station.

Come from Miles Around

Five hundred and fifty persons registered for the institute this year. They came from Cook county 125 miles distant; from adjacent Lake county.

Some of them hailed from Pine county, 75 miles to the south, the scene of the never-to-be-forgotten forest fire of '94, but now a land rich in cows and clover. Carlton county sent its quota. The Aitkin and Itasco county groups drove 100 miles. The home county, St. Louis, naturally furnished the bulk of the attendance. Most of the students were actual farmers; others aspired to be. There were farm and city women, gardeners, fruit growers, and florists.

All classes were represented, even the new devotees of "Fur Animal Husbandry." The day attendance of 250 or more would gradually grow to 600 and better each night. The total attendance at the three-day programs was over 2,000.

The social range was just as wide. Among the 300 who sat down to the Fourth Annual Rural Leadership Dinner, the culminating event of the week, there were modest 40-acre pioneers, 4-H heroes, and industrial magnates of the "Zenith City."

To Stimulate Year-round Agriculture

The aim of the Arrowhead Institute is to interpret northern agriculture and stimulate a better use of land for both winter and summer crops—to anticipate a January harvest of pulp and fur off the rougher land and a July harvest of feed and food crops from the tilled acres.

A poultry and fur program came the first day. The second day cattle, sheep, and crops had their innings. Three programs were held the last day, flowers, vegetables and fruits, and fairs.

The St. Louis County Club, working with neighboring farm bureaus, staged the evening programs. There were respectively Lake, Carlton, and St. Louis County nights. The Lakewood Farm Club served the Rural Leadership Dinner, sponsored by the Duluth Council of Agriculture where personal and group honors were conferred.

Farmers Select Honor Roll

Several meetings were scheduled and held, including the annual meeting of the St. Louis county poultrymen, the Tri-county 4-H judging, the Smith-Hughes judging participated in by 7 teams, the veterinary conference on abortion control, and the Arrowhead potato conference. On the last day, the annual conference of county and local fairs was held, and the honor-roll farmers of '28, '29, and '30 formed a fraternity.

For the Senior Honor Roll, five men are chosen each year, one from each county, by the farmers themselves. Each man is selected for some contribution he has made to the agriculture of the region. This is neither a hall-of-fame nor a master-farmer project, but here are some of the accomplishments: one man has cleared three farms; another conquered red clay; a third made a timber farm finance university training for his family; a fourth began the cauliflower industry. The pictures of these men, class by class, grace the

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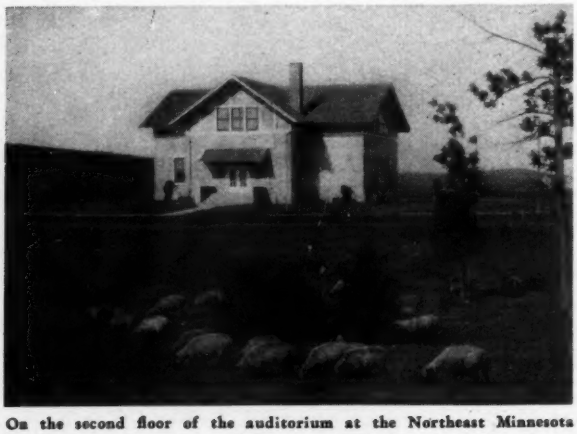


On the second floor of the auditorium at the Northeast Minnesota Experiment Station is a well-equipped kitchen and dining-room.

Legumes are the corner-stone to an efficient soil-building program. Fertilizer rich in available phosphoric acid and potash assures successful stands of clover and alfalfa on worn-out land.

Rejuvenating Abandoned Farms

By C. A. LeClair

St. Paul, Minnesota

THE business of rebuilding the abandoned farms of America in a systematic way is a comparatively new development. Bond and mortgage companies, banks and insurance firms have always loaned heavily on farm property. For many years, when foreclosures were necessary, the farms reverting back to the loaning firm were disposed of as promptly as possible for what they would bring. More recently, however, extensive loan institutions have established real estate departments, the personnel of which include agriculturally trained experts capable of evaluating farm lands in which their employers have an interest. These field men not only render assistance and advice to mortgagees which help them to dispose of their obligations, but they likewise direct the most economic handling of such farms as must be taken over by their firm.

It has now become the general practice of most farm-loan institutions to handle their properties much after the fashion that automobile merchants conduct the used-car problem. Farms which revert to mortgagors are invariably depleted in fertility and the buildings are dilapidated. Hence, although such properties may be located in favorable places, they are unattractive to both buyers and tenants. For this reason most progressive land-holding companies now follow systematic plans of improving such holdings. In other words, they employ a staff of experts capable of rejuvenating worn-out farms.

The fertility of the land of their

farms is also rebuilt with as much thoroughness as are the buildings of the farmsteads. A corps of agronomists survey the individual fields and recommend the proper fertilizer treatment and cropping system to be followed. Where lime is required to sweeten the soil, it is purchased and applied.

On the thinnest lands mammoth clover is grown with the aid of commercial fertilizer as a means of putting humus in the soil.

Fertilizers Pay

Through the generous use of commercial fertilizers in conjunction with a sound cropping system even the most depleted soils are being put back into profitable production. Thus, not only is the market value of farms enhanced, but the plan has put these holdings in demand by the highest type of tenant. Invariably, even though the tenants invest equally with the holding companies in the cost of fertilizer and lime, they have made from their share of returns more than satisfactory profits. Very frequently the tenants purchase the farms they operate from their share of the earnings. In this way the holding company liquidates its original investment and carrying charge in the property.

The success which holding companies are having in rehabilitating vast acreages of abandoned farms proves conclusively that there is very little wrong with the business of farming. In truth, perhaps, the real explanation of most of the drift of population from the country to the city is represented by the army of misfits who occupy the land. There have always been a lot of common-place farmers in this country who naturally could not survive by practising horse and buggy methods in this modern era. Farming to be successful requires vision and management. Regardless of the type of agriculture practised, there is a definite sized unit which is practical. As Professor E. L. Nixon of Pennsylvania State College says, "A man who grows seven acres of potatoes, eight acres of corn, and keeps six cows simply produces stuff. Whereas, the farmer who perhaps has 20 acres of potatoes, 30 acres of corn, 40 acres of grain, plenty of pasture, and 20 cows makes a living and something besides." In other words, in the latter case he can fully utilize his ability and equipment.

Take the case of Fred C. Dahl of Casey, Iowa, who contracted on a crop-share basis to personally operate a 320-acre farm which had been taken over on March 1, 1926, by one of the large Iowa life insurance companies. This farm in the year of 1925, had

(*Turn to page* 53)

Even on a run-down, weed-infested farm, a sack of complete fertilizer to the acre applied with a corn planter attachment greatly increased the yield. Note the shock of unfertilized corn at the left and the shock at the right grown with commercial plant food.

A deep, well-pulverized seedbed is necessary for the horse radish crop.

Horse Radish

By E. R. Lancashire

Vegetable Specialist, Ohio State College of Agriculture

HORSE radish has recently been substituted for applesauce by a Pennsylvania man. The substitution was in words only and this eastern grower was talking about gardens when he said, "The production of $300 worth of vegetables from a one-fifth acre farm garden sounds like a lot of horse radish to me."

He was promptly complimented on his use of "horse radish" in place of the more common "applesauce." There was some fact as well as fiction behind his statement too, for one-fifth of an acre of horse radish could easily be worth $300.

The extremely hardy and very pungent-flavored horse radish is an old-timer. It has been used by eastern European people for hundreds of years, and as far back as 1586 it was introduced to England.

Horse radish has been the subject of many a yarn which would compare favorably with the ones told by deep-sea fishermen to their fresh-water brothers of the Middle West. This has been especially true during the past few years when the straight, fleshy roots have sold at 10 and even more cents per pound.

Most anyone can visualize a 10-ton per acre root crop, and horse radish is a root crop. According to such narrators all that is required would be to produce a pound and a half of roots for each foot of row with the rows three feet apart. The trick of securing a 10-ton per acre yield would then be accomplished.

Dreams are all right in their place, but the place is not likely to be a horse radish patch. The 10-ton yield figured at 10 cents a pound would pro-

duce a staggering sum, $2,000. Figured at 15 cents a pound, it sounds still better, $3,000.

A distinguished educator in the vegetable gardening business once said to a group of future vegetable growers, "Figure your income from vegetable sales and divide it by two; figure the expenses and multiply them by two. Perhaps you will not then become over enthusiastic."

Such logic might well be applied to the horse radish business. The 10-ton yield can easily turn out to be five, four, or even two tons per acre. The price paid the past few years has been good, but it could change radically in a single season. The commercial crop in the United States is produced in Missouri, Illinois, New York, and New Jersey. There is room in nearly every garden for a small amount of this root crop, and if the conditions are just right, a small beginning could be expanded until it could become a commercial planting.

Needs Fertile Soil

These conditions include a fertile, deep soil. Deep, sandy loams and rich river-bottom soils like those near St. Louis, Missouri, are especially adapted to horse radish production if they are properly fertilized with generous amounts—2,000 pounds per acre of a good, complete fertilizer such as a 4-12-4 or a 4-10-6.

A ton of complete fertilizer per acre applied broadcast and worked in at least three or four inches deep will meet the requirements for a good yield of horse radish. The application should be made as early in the spring as the soil can be worked and the planting should follow immediately since this crop requires a full growing season. An early start is necessary even though the fleshy roots grow most rapidly during the late summer and in the fall months.

For those who are fortunate enough to have available a supply of well-rotted manure it is advisable to use 10 or even 20 tons per acre for the horse radish crop. If the grower will also apply 750 to 1,000 pounds per acre of 20 per cent superphosphate, the necessary balance will be established between the essential elements—nitrogen, phosphorus, and potash. The amount needed to balance manure properly is about 75 pounds of the superphosphate per ton of manure.

Both the manure and the superphosphate could be applied during the fall and plowed under at that time if the manure was available. In such a case the plowman should distribute the fertilizer and the manure throughout the plow depth. This can be done by standing the furrows on edge. The next spring a deep tillage tool, such as one of the 22-inch discs or the new type of cultivator which stirs the soil to a depth of 10 or 12 inches, can be used.

If the manure is well rotted and if it is reinforced with the amount of superphosphate suggested, the fertilizer program is satisfactory. Any further addition of plant food should be a complete goods such as a 4-12-4 or a 4-10-6. In all fertilizer applications it is best to keep the required balance between nitrogen, phosphorus, and potash.

Must Have Good Seedbed

The next condition upon which a bumper crop of horse radish depends is the planting of 6 to 12-inch root cuttings in a deeply pulverized, loose seedbed. Hard, shallow soils produce crooked roots, the kind for which the market has little use. These root cuttings are ¼ to ½ inch in diameter.

Moisture is essential. A 20-acre field of irrigated horse radish which has been planted each year for the last 12 years has given ample proof of the value of water to this root crop. An acre inch of water applied once each week would meet all requirements for moisture.

The depth of the seedbed is very important. Root cuttings six or more

(*Turn to page* 51)

NOTHING BEFORE EVER TASTED SO GOOD

PICTORIAL

PEGGY'S COVE, NOVA SCO
VILLAGE

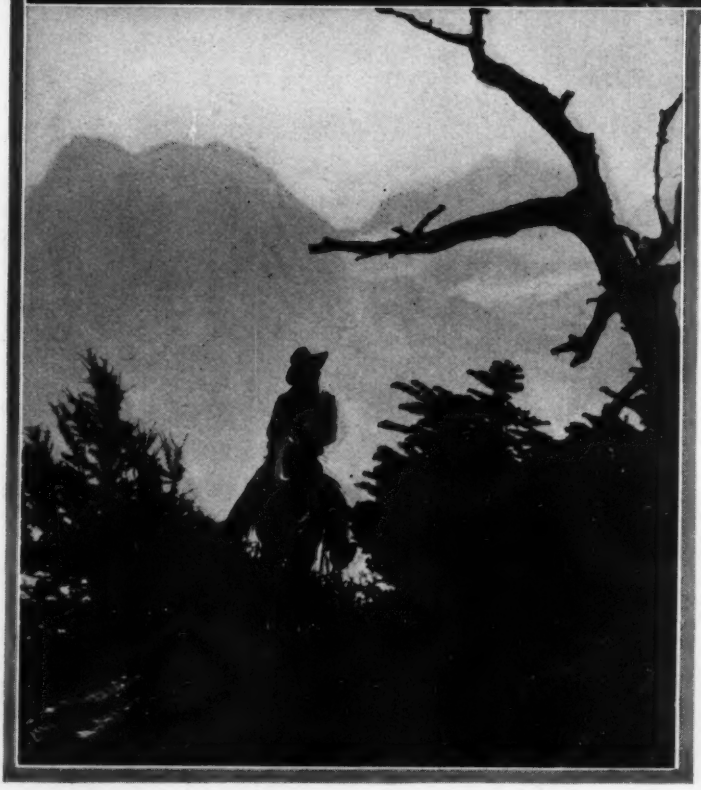
Left: These fishermen are a rugged lot, with jovial spirits. "They whose husbands go down to the sea in ships" are kindly wives, also with jovial spirits. But perhaps there's something significant in the clenched fist of the wife who is being left behind as he goes out to his field in the deep.

Below: A little hay is made, too, in this small Nova Scotian fishing village where the menfolks, in from the sea in the afternoon, store away food for the community oxen. The hay is carted to the barn on a rack improvised from an old fishing net thrown over a pair of poles and propelled by manpower.

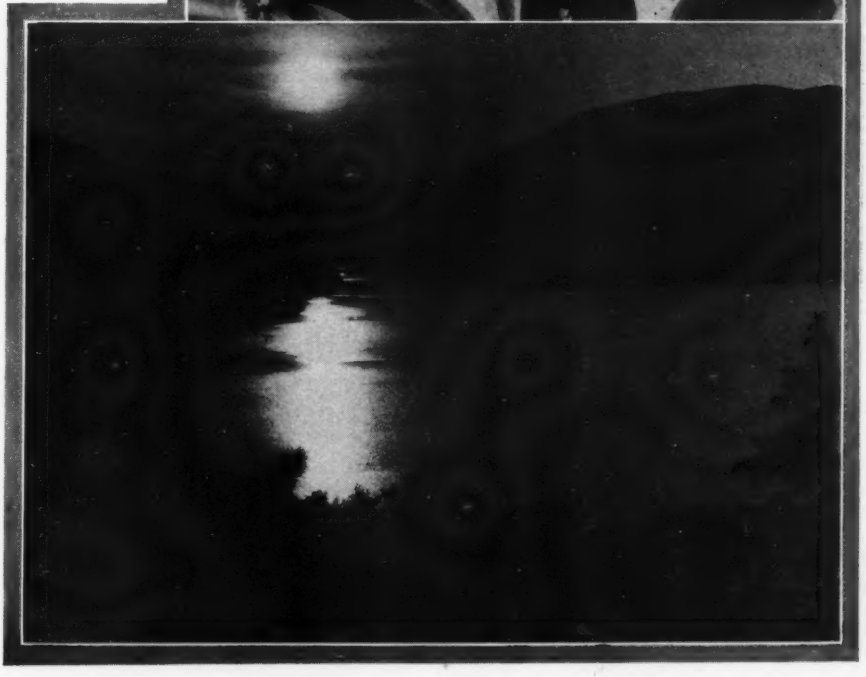
OVA SCOTIA—A FISHING VILLAGE

Right: Grandma Crooks, ninety years old, of Peggy's Cove, is representative of the sturdy Scotian wives who carry on well into the years. She, like her mother and grandmother, is a fisherman's wife and the mother of fishermen. Even in her old age, she is attached to the homely duties of her simple home.

Below: The weather is a very important subject of conversation. These two old fellows are no longer active with the boats, but they keep the nets in repair and tend their whittlin' except when there is advice to be given. "Sittin' and whittlin' and thinkin's a pretty good pastime," they say.



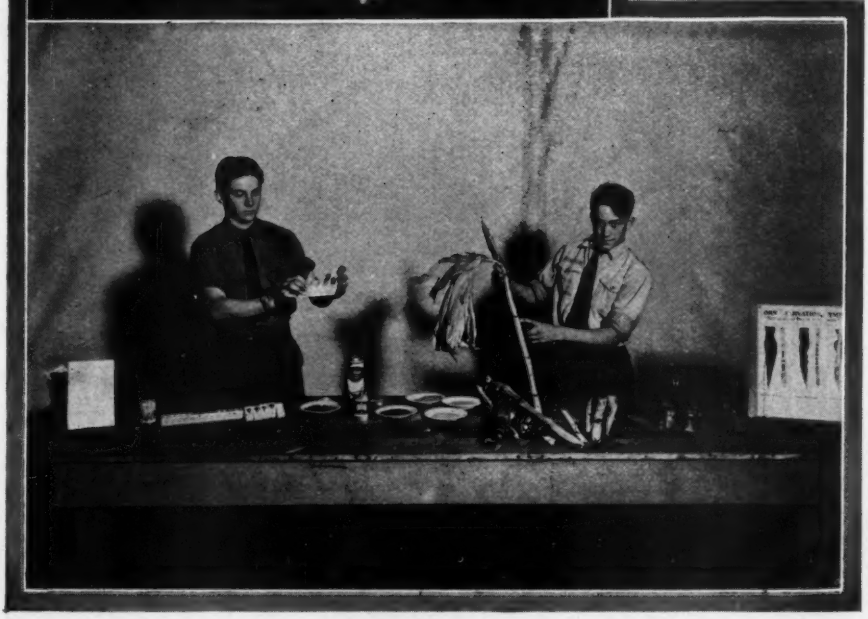
Canada is rich in vacation lures. Above: A scene near Perce Rock on the Gaspe Coast. Left: Canadian mountains are among the most picturesque in the world.



Europe annually draws a percentage of American vacationists. Right: One of the gargoyles of Notre Dame Cathedral. Below: Ingonish, Cape Breton Island, Nova Scotia.

Left: W. J. Morse of the U. S. Department of Agriculture recently returned from a two-year stay in Japan. He is shown here unpacking a box of black miso, a product made by steaming and grinding soybeans and then fermenting them for two years. It makes good soup. Mr. Morse brought back about 4,000 lots of seed, nearly 400 samples of soybean products, and information on the many ways the Japanese utilize soybeans, in the hope that new outlets for the American crop may be opened.

Below: At the recent 4-H Club Round-up held at Purdue University, this "Demonstration Team" showed attentive audiences what is in commercial fertilizers. By the use of the Hoffer corn-stalk test, they pointed out what happens when the plant obtains a sufficient or insufficient amount of nitrogen, phosphoric acid, and potash.



The Editors Talk

C. S. T. A. Convenes

Canada is holding a rather unique meeting from June 22 to 26 at the Agricultural College, Guelph, Ontario, the oldest Agricultural College in Canada and one of the oldest in North America. The occasion is the Eleventh Annual Convention of the Canadian Society of Technical Agriculturists.

The Society includes all types of agricultural specialists, in soils, crops, fertilizers, animal husbandry, disease control, horticulture, and many other fields. It also includes workers in the Provincial and Dominion Government services and in industry. It is thus an all inclusive convention, in many ways to be highly commended as giving a breadth of view and variety of interest that is often sadly missed in the conventions of some highly specialized workers.

The convention also has an international viewpoint, inasmuch as several speakers from the United States will be on the program. Among such speakers are Dr. James C. Dickson, University of Wisconsin; Dr. O. C. Stine of the U. S. Department of Agriculture and President of the American Farm Economics Association; and Dr. D. F. Jones of the Agricultural Experiment Station, New Haven, Connecticut. Dr. J. B. Orr, the well-known British authority on animal nutrition at the Rowett Research Institute near Aberdeen, Scotland is also on the program. Canada is, of course, intensely interested in the production and price of wheat. Dr. Dickson's address on "Agricultural Development in Soviet Russia and Its Relation to the Wheat Problem" will, therefore, be followed with a great deal of interest.

In addition to a very excellent general program, the special group sessions include the Canadian Society of Agricultural Economics, The Eastern Canada Society of Animal Production, The Canadian Phytopathological Society, Horticultural and Soils Groups.

This convention is held in different parts of Canada each year. Last year the Society met at Wolfville, Novia Scotia. We wish the convention every success.

Nitrogen vs. Ammonia

At a meeting in New York on May 20 the fertilizer industry in cooperation with the fertilizer control officials of New York, Pennsylvania, Maryland, New Jersey, Massachusetts, Connecticut, Rhode Island, Vermont, New Hampshire, Delaware, West Virginia, Virginia and Maine brought to a successful conclusion its efforts of many years to substitute nitrogen for ammonia in registering and selling nitrogenous fertilizers.

The conference was held under the auspices of the National Fertilizer

Association. At the conference were representatives of the fertilizer companies selling fertilizers in these States, agronomists from several States and the State chemists from nearly every State.

In addition to the substitution of nitrogen for ammonia, it was proposed to eliminate fractional analyses in fertilizer mixtures, such as 4½-8-4. This conference was the culmination of an effort which started at a meeting of groups interested in fertilizers at Louisville, Kentucky, in 1927. The recommendations agreed upon at that meeting have been affirmed at later meetings.

While it is highly desirable in the interests of simplification to use only the term nitrogen and avoid fractional analyses, there are, of course, many practical problems to be carefully considered before such a program can be put into effect. These practical problems had to be considered both by the trade and State officials. It, therefore, is a very creditable record that such an agreement has been reached in so short a time.

Congratulations

A soil fertility conference will be held at the Pennsylvania State College from June 24 to 26, 1931. The purpose of the conference is to commemorate the 50th anniversary of the soil fertility plots which are the oldest continuous fertilizer experiment in America, and there is little doubt that this will be an historic meeting.

The plots are very extensive. The series include 144 one-eighth acre plots arranged in four tiers of 36 plots each. The 23 manurial treatments, with the exception of burnt lime, are applied to corn and wheat in a four-year grain rotation of corn, oats, wheat, and hay (mixed clover and timothy). The burnt lime treatment is applied once each rotation to the corn ground. During the first 10 rotations, 1881-1921, no lime was applied except to plots in which it was included in the scheme of treatments. In 1922 and 1923 all plots of tiers two and four respectively, with the exception of two P-K treated plots, and those previously limed, received a dressing of pulverized limestone. With the exception of the plots which receive biennal dressings of farm manure the only source of organic matter has been the roots and stubble of the harvested crops.

These plots rank along side the historic Broadbalk Field of Rothamsted. While experimental methods have changed since the inauguration of this series of plots, much credit is due the pioneers, particularly Professor W. H. Jordan who will long be remembered as the "Father of the old fertility plots." Professor Jordan went to Pennsylvania State College in 1881 as Professor of Agricultural Chemistry. The first Director of the Agricultural Experiment Station, Dr. H. B. Armsby, continued in this position until 1907. Dr. William Frear was appointed Agricultural Chemist in 1885. He was later Vice-Director of the Experiment Station and Chief Chemist. Willam C. Patterson was former Superintendent of Grounds, plots, and farms who joined the staff of Penn State College in 1871 and continued in that capacity until his death in 1909. He supervised the field work of the fertility plots for 29 years. Enos H. Hess was assistant to the Director of the Experiment Station from 1894 to 1901. He prepared the report of the first 16 years' results from the old plots. He also made the first chemical studies of the plots.

Thus the conference in June has an historic background and tradition as a stimulus to the discussions that are to take place. Various well-known au-

thorities from the United States Department of Agriculture and other agricultural experiment stations will be there to discuss various problems. In addition to the old series of fertility plots, similar work at other places, including the 60 acres of pasture at Kylertown seeded in 1929, will be inspected.

While our experimental methods and ideas of soil technology have changed very much since these plots were started, as with the case of the long-established Broadbalk Field at Rothamsted, such plots have a great value in certain phases of work. It is to be hoped that it will be possible to continue the fertilizer treatments for many years. The Pennsylvania State College is to be congratulated on having maintained these plots for 50 years under the same continuous fertilizer treatments.

Why Feed Insects?

It costs the United States $2,000,000,000 a year to feed its insect population, according to J. A. Hyslop, Chief of Insect Pest Survey, U. S. Department of Agriculture. Thirty-six pests cause nearly half of the damage and at least two-thirds of the damage is preventable.

Mr. Hyslop recognizes that monetary estimates of insect damage cannot be precise if for no other reason than the fact that destruction of part of a crop by an insect may enhance the money value of the remainder. But they do serve to indicate the relative destructiveness of the pests.

Heading the list of notoriety in the insect underworld is the boll weevil. On another page in this issue, C. H. Brannon, Extension Entomologist, State College Station, Raleigh, N. C., gives some interesting facts and pertinent suggestions on the control of this marauder.

What Fertilizer for Tree Fruits?

The Northwest Fertilizer Association is to be congratulated on its efforts to obtain actual data on the fertilizer practices in apple orchards by sending out a questionnaire to make a fertilizer survey of Washington, Oregon, and British Columbia.

As everybody knows, there is an increasing difference of opinion as regards the best fertilizers to use on tree fruits. A great emphasis has been laid on the use of nitrogen. Undoubtedly nitrogen normally is among the first limiting factors on most soil types. The practical question is being asked, however, "Is the use of nitrogen alone a sound permanent program?" A carefully conducted experimental work is badly needed not only on apples but on other fruits and on as many soil types as possible. Because of the nature of the crop such experimental work normally requires some years in order to obtain positive results. Then, again, the results themselves may be difficult to obtain since they involve not only yield but many other factors relating to shipping and storage quality, resistance to disease, and other factors sometimes difficult to measure.

A survey of the actual practices of reliable groups in districts where tree fruits are the major crop is therefore of special significance and importance.

The questionnaire being sent out by the Northwest Fertilizer Association will include the growers in the famous Wenatchee and Yakima Valleys where apples are by far the predominant crop. The methods of managing the orchards are intensive. The growers are skilled in their work. Their observations as the result of actual practice are, therefore, worthy of study by anyone seeking an honest answer to the question, "What is the most profitable fertilizer to be used in orchards as a permanent program?"

Already there are evidences among practical men that nitrogen alone is not in all cases satisfactory. It is, therefore, highly important that while the long-continued experiments are in operation more definite information be obtained that in the meantime can be used by orchardists with some assurance of success not only in making a profit from the use of the fertilizer but in maintaining their orchards in the best condition.

The N. F. A. Convention

The Seventh Annual Convention of the National Fertilizer Association will return this year to White Sulphur Springs after an absence of three years at Norfolk, Virginia, New London, Connecticut, and Colorado Springs, Colorado. While other places perhaps have some more alluring features for all the requirements of a convention, not forgetting the golf, perhaps there is no better place than White Sulphur Springs.

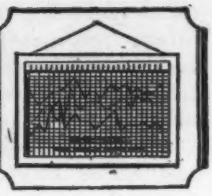
The Convention opens on Monday, June 8, and continues until Friday, June 12. Reports indicate that the sessions on Tuesday will be open to all classes of membership and guests while the sessions on Wednesday and Thursday mornings, either one or both, will be executive sessions of active members. Certainly in present business conditions there is more than ever an urgent need for a practical and definite goal and policy. It is at such sessions that such policies should be developed, but if success is to be achieved, it is important that everybody interested in the success of the industry be represented, and that they know what they want to say and say it.

Among the many problems which the fertilizer industry might well consider are the increasing use of fertilizers on crops in areas where fertilizer is not used or at least used in only small quantities at present. Far too much emphasis has been placed upon three crops, cotton, tobacco, and potatoes. There is an urgent need to spread the fertilizer base so that when the crop prices go down there is something to fall back on. A second problem is that in times of over-production the effect on the quality of the crop and reducing cost of production is an important field to be canvassed, and as much definite data as possible should be gathered.

A third problem is the use of statistics and economics to assist in making adjustments ahead of time. Too often we go on producing and importing on the slim hope that everything is going to turn out much better than it actually does. Can proper statistical work take some of the guess out of the problem? At least it is worth considering and certain it is that there will always be plenty of guess left in any case.

We hope for the Association a successful convention and progress in the solution of the problems facing the industry.

AGRICULTURAL DEVELOPMENTS



NEW JERSEY SECRETARY SEES BETTER FARM CONDITIONS AHEAD

"New Jersey, in 1950, will have more than 1,500,000 acres of land under cultivation and many of our intensive farming operations will be much more common than today," according to William B. Duryee, New Jersey Secretary of Agriculture. "In 1950, agriculture will still be our greatest single industry, with an annual output exceeding $100,000,000 in value. The farmers of the State will have turned over to Midwestern areas the production of grain and other raw products and will be concentrating on the production of finished products such as eggs, milk, and the more intensive fruit and vegetable crops.

"There will be a better understanding and application of the most suitable economic units of area for farms. It is difficult to say whether the average farm will be larger or smaller in area by 1950, but we have no reason to believe that the very large-scale farm project will be of any greater importance than it is today, except where a united effort on the part of a number of farmers retaining their individual initiative will result in greater concentration of output and greater efficiency in production.

"A recent study of large-scale farming operations in the State does not indicate that these large units will crowd out individual farmsteads under the conditions that will exist in the next two or three decades. Lower costs of production will enter into the picture in New Jersey and these lowered costs will result from less human labor. The extent to which human labor is employed will be smaller than at any time since the war.

"By 1950, this generation will have learned its lesson in practical economics and there will be definitely fewer governmental operations intended to aid agriculture artificially. We look forward to an increasing mechanization of agricultural operations, improved living conditions for farmers, and a more equitable system of taxation, under which real estate would carry less of a burden than at present." —*Marketing Activities, May* 20, 1931.

CALIFORNIA ECONOMIST SAYS FOUR FACTORS MAKE FRUIT PRICES

Supply, quality, buying power of consumers, and volume of competing fruits are the four major factors that determine the prices paid for California fruits, according to H. R. Wellman, California Agricultural Extension Service.

Dr. Wellman says that while the trend of production of summer oranges has increased 100 per cent, demand also had increased and the trend of prices had not decreased. This, he says, was brought about by improvement in quality of pack, wider distribution, development of new outlets, extensive advertising, and the active participation of nutrition workers in advocating the wider use of oranges.—*Marketing Activities, May* 20, 1931.

POTASH FERTILIZERS AND CLAY SOILS

Clay soils, by reason of their various geological origins and conditions of weathering, differ somewhat in their potash content. Clays arising from

rocks containing feldspathic and micaceous minerals will usually contain considerable potash. This is usually combined with complex silicates and is unavailable to plants.

Nearly all clays contain large amounts of colloidal materials which have considerable adsorbing power for potash. Sometimes small applications of potash do not give any beneficial result. Being held very tightly by the colloids, this adsorbed potash cannot be easily used by plants. If larger amounts of potash are applied, strong adsorption by the soil is satisfied and the rest of the potash is in a form easily used by plants. Sometimes applications of 125 to 250 pounds of muriate of potash to the acre have not given profitable benefits even on potatoes, leading one to think that potash was not necessary on that soil. Applications of 500 pounds of muriate of potash balanced with sufficient nitrogen frequently gave remarkably favorable results.

Demolon estimates that in cases where organic colloids can be ignored, the maximum adsorbing power of the soil for muriate of potash represents 4 to 5 per cent of the weight of the clay content (clay loams and clays contain 20 per cent or more clay). He adds that in spite of the natural fertility of soils that contain 3½ per cent potash in their clay fraction, it is not surprising that potash salts often give striking results. It is necessary to consider the availability of the potash held in the state of adsorption complexes.—*Professor A. Bruno, Mulhouse, France.*

THE NEED FOR POTASH

With the crops themselves removing much potash from the soil, and the bulk of the produce being sold off the holding, potash fertilizer is much more necessary than formerly, according to H. V. Garner of Rothamsted Experiment Station. Under older systems of farming, where grain and fat stock were the chief sales, and all the roots and straws were kept on the holding, the need for potash fertilizers was not severely felt. However, with intensive truck farming on sandy soils, the need for potash is most marked and forms a governing factor in production, unless great quantities of manure or seaweed are available. Even under ordinary general farming conditions, the greater the acreage devoted to such crops as potatoes, sugar beets, carrots, and onions, the more will be the need of potash fertilizers.

Under general farming conditions, where good manure is abundant, the effect of potash shortage does not readily show itself. The crops probably will be fairly good, but a potash fertilizer would improve them. In the absence of a large supply of manure, however, the effect of potash starvation is obvious, particularly with potatoes. Here, the leaf takes on a dark bronze color, dead patches appear on the margins, and cropping is reduced to a very low level.

The author states that, "until recently farmers who used mixed fertilizers were usually offered a compound which contained too little potash to correct the conditions mentioned above; this state of affairs has improved of late, and 10 per cent of potash in a compound fertilizer, or home-made mixture is quite little enough in cases of marked need."—*Journal of the Ministry of Agriculture (London). February,* 1928.

"To spend less money is not necessarily the best way to reduce costs. When prices are unfavorable, however, the usual thing is for the livestock man to stop buying purebred sires, or for the dairyman to cut down on the purchase of protein feeds, or for the cotton grower to restrict his use of commercial fertilizers. Measures like these may reduce expenditures, but they do so at the cost of quality and yield per unit of land or animal." —*Arthur M. Hyde, Secretary of Agriculture.*

The Best Strawberries I Ever Tasted

By S. D. Conner

Research Chemist, Purdue University

EVERYONE, no doubt, has many an odd and apparently trivial incident that sticks in his memory for years and years, while many things that he would like to remember have faded away. An old philosopher once remarked: "Doubtless the Lord could have made a better fruit than the strawberry, but doubtless he never did." Now, in searching the archives of my memory, I recall sometimes that I could almost agree with him. On the other hand, there were times when I would have been inclined to say the "worst" fruit, instead of the best. For a long time the best strawberries I could recall were those I picked on a hillside pasture in the mountains of West Virginia. I was a small boy; the berries were wild ones, and they were certainly so delicious that today I can see those small, red berries in that bright, sunny pasture.

The scene changes. I am on a railway dining-car. I have ordered strawberries. I had my doubts when they were set before me; I had no doubts after I tasted them. They were without doubt the most unpalatable things I ever put in my mouth.

I have often wondered why there could be so much difference in strawberries. The wise ones will of course say, "Anyone should know that wild strawberries are sweeter than tame ones." Yes, I have heard that, too, and experienced it likewise. Yet, when the wild plants are taken to the garden, lo, the wild flavor is lost. Even in a dish of strawberries from the same patch, there are good ones and bad ones. They are like the little girl: "When they are good they are very, very good, and when they are bad they are horrid."

But I started to tell you about the best strawberries I ever tasted. I am coming to that, but I had to go outside of this country to find them, and they were not wild strawberries either. It was near the small town of Hedel in Holland. It was in an experiment field, and I did not get many of the berries. They were bright red and

A typical farm home near Hedel, Holland.

firm, and oh, so sweet. I am certain I will never forget their delicious taste and flavor. No, it was not the variety, because just a few feet away was the same variety of berries that were pale and flat and insipid and soft and altogether the kind that you would wish you had never seen.

Why the difference? Well, the good ones were heavily fertilized with potash, and the poor ones had no potash. Now I am not so certain what would happen to the quality of strawberries if some other fertilizer ingredient were left out, but I was most quickly and thoroughly convinced that it was disastrous to strawberry quality to leave off the potash, because the berries that had only nitrogen and phosphate were very, very poor.

Hollanders use more fertilizer than the people of any other country, and it is my opinion that no other people in the world are better farmers than the Dutch. Holland is almost all made soil washed down by the rivers Rhine and Muese. Much of it has been recovered from swamps and lakes by raising dykes around it, and pumping the water out. This soil was at first in no need of fertilizer, but after farming it over a thousand years, the Dutch know that it needs fertilizer, and they pile it on in such quantities that the land is like a garden, and the crop yields are very high.

High yields go hand in hand with high quality. The fertilizer used by the Dutch to produce the superfine quality strawberries was 400 pounds ammonium sulphate, 800 pounds 14 per cent superphosphate, and 400 to 800 pounds muriate of potash per acre. Somewhat to our astonishment they called 400 pounds muriate of potash, low potash, while the 800 pounds per acre was designated high potash. In this country 400 pounds is considered rather high. In Holland and France they seem to be convinced that while nitrate forms of nitrogen are best for some crops, ammonium sulphate is much better for strawberries than nitrate of soda, or other forms of nitrogen.

Dr. H. Lindeman, who is one of the best fertilizer authorities in Holland, said that when potash was first tried on the alluvial land of South Holland, a relatively small amount was used per acre and little response was noted. When large applications of potash were tried good response was obtained. This was explained on the basis that soil deficient in potash must first be satisfied before the potash would be available for good crop growth, hence the large amounts of potash used in Holland.

I have since thought about the high quality of wild strawberries, and knowing that there is much potash still in uncultivated soils, I am wondering if it may not be that much of the high quality of the wild fruit is due to the fact that it gets plenty of potash. Straw, which is so much used as a mulch on strawberry land is rich in potash, and no doubt much of the value of straw is due to that element.

PENNSYLVANIA GRADING OF PRODUCTS SHOWS INCREASE

Pennsylvania growers sold $2,500,000 worth of graded and officially inspected products during the past season, according to D. M. James, Pennsylvania Bureau of Markets. This is an increase of approximately $1,000,000 over the estimated value of graded products sold the previous season.

A total of 2,975 carloads of graded and Federal-State inspected fruits were shipped and 44,000,000 pounds of raw cannery products were sold on a graded basis during the 1930-31 period, compared to 2,276 carloads of fruits and 13,000,000 pounds of cannery products during the 1929-30 season.—*Marketing Activities, May* 13, 1931.

REVIEWS

This section contains a short review of some of the most practical and important bulletins, and lists all recent publications of the United States Department of Agriculture and the State Experiment Stations relating to Soils, Fertilizers, Economics, Crops, Crop Diseases, and Insects. A file of this department of BETTER CROPS WITH PLANT FOOD would provide a complete index covering all publications from these sources on the particular subjects named.

THE Report for 1930 of the Tobacco Substation at Windsor, Connecticut, by P. J. Anderson, T. R. Swanback, O. E. Street and others, recently issued as Bulletin 326 of the Connecticut Agricultural Experiment Station, is a valuable contribution to tobacco literature. The report describes the careful work done and results of potash fertilizer experiments, nitrogen fertilizer experiments, fractional application of fertilizer, manure as a supplement to commercial fertilizer, cover crop experiments, the relation of magnesia to the burning qualities of cigar leaf tobacco, effect of topping and suckering on development of the tobacco plant, influence of plant trimming on weight of seeds, curing experiments, tobacco insect studies in 1930, fertilizer losses through leaching measured by lysimeter experiments, the use of coke in heating tobacco sheds, and fire-curing tests on stalk tobacco.

Space does not permit a full review here of all the work coming under these headings. However, an indication of the thoroughness of the work and the particular attention given to the question of the effect of fertilization on quality of tobacco may be briefly summed up in some of the findings of the potash fertilizer experiments.

These tests were planned and have been carried over a period of years to compare the relative merits of the potash carriers—sulphate, carbonate, and nitrate of potash. So as to have the fullest information on the subject, records were kept from start to finish on the acre yields, percentage of grades, grade index, and chemical analyses of the crops grown with potash from the various carriers.

Cigars were made, through the courtesy of one of the large cigar manufacturers, with the tobacco grown on a cottonhull ash formula as contrasted with others raised on the same fields, with other sources of potash "(standard commercial fertilizer mixtures)." The smoking quality of the cigars from the various fields was tested by Dr. Anderson and the experts from the manufacturing company. They could detect no "consistently favorable influence on the burn, taste or aroma of the cottonhull ash cigars as compared with the others." Dr. Anderson concludes his discussion of cottonhull ash as follows:—

> "Final conclusions as to the relative value of cottonhull ashes and other potash carriers must await the continuation of these experiments through a series of years. There is nothing in the results up to the present to indicate that this material is in any way superior to some of the others."

Regarding the yield and grading of the tobacco from the plots having different potash carriers, Dr. Anderson writes as follows:—"The results indicate that as far as yield and grading are concerned it makes little difference which carrier or combination of carriers is used." Elsewhere he mentions that "the only difference which may

possibly be considered sufficiently large to be significant are the average lower yield and higher grade index on the carbonate plots."——"That it makes little difference which of the three or what combination of the three carriers is used to supply the potash requirements of the tobacco crop. The yield per acre and the grading of the crop are essentially the same."

The sorting records lead to the conclusion that shortage of potash adversely affects the grading of the tobacco more than the yield.

In the analysis of the tobacco it is shown that increases in amount of potash up to 300 lbs. of K_2O per acre have given an increase of potash in the leaves, of about 1 per cent for each 100 pounds of fertilizer potash. For three successive years there has been a steady decline in the percentage of K_2O in the leaves, when all special carriers of potash are omitted from the fertilizer. A steady decline in the percentage of K_2O in the leaves—though less pronounced—is noted where only 100 lbs. of K_2O per acre were applied.

Another significant fact—which agrees with their previous results—is that the percentage of CaO varied inversely as that of the K_2O.

The other work described in the report will prove quite as interesting to tobacco growers and the bulletin will undoubtedly prove a valuable reference to everyone interested in increasing profits from tobacco through improving quality and yields.

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Soils

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Crops

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"Emergency Pasture and Hay Crop," Agr. Exp. Sta., St. Paul, Minn., Cir. 33, Sept., 1930, R. F. Crim and H. K. Wilson.

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"Cabbage," U. S. D. A., Washington, D. C., Farmers' Bul. 433, Oct., 1930, L. C. Corbett.

"Strawberry Varieties in the United States," U. S. D. A., Washington, D. C., Farmers' Bul. 1043, Feb., 1931, George M. Darrow and George F. Waldo.

"Growing and Utilizing Sorghums for Forage," U. S. D. A., Washington, D. C., Farmers' Bul. 1158, Nov., 1930, H. N. Vinall and R. E. Getty.

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"Marketing the Commercial Crop of Early Potatoes," U. S. D. A., Washington, D. C., Cir. 149, Jan., 1931, J. W. Park.

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NORTH CAROLINA FINDS APPLES COSTS FIFTY CENTS A BUSHEL

Brushy Mountain (North Carolina) apple growers can produce their crops at a cost of 50 cents a bushel, according to H. R. Niswonger, extension horticulturist in the State, after conducting a series of cost-finding demonstrations with four prominent growers in the Brushy Mountain area.

The cost of growing the apples to maturity was 23 cents a bushel; picking the crop cost 5 cents a bushel, and all overhead charges amounted to 22 cents a bushel. The four growers kept records on 7,250 trees from 8 to 20 years old. They were of the Limbertwig, Delicious, Stayman, and Bonum varieties, and produced 7,530 bushels of marketable fruit last season. The cost of production was somewhat higher than usual due to the poor crop.—*Marketing Activities, May 20, 1931.*

Control Flower Garden Insects

By C. H. Brannon

Extension Entomologist, North Carolina State College of Agriculture and Engineering

INSECT pests attack plants in the flower garden and often cause serious damage or complete destruction. There is an insect pest for practically every kind of plant, and garden plants are no exception. The damage to field crops and orchards often attracts wide attention, and much effort is directed toward control measures in the field each year. Most folks who have flower gardens seem to consider insect pests as necessary evils from which there is little or no relief.

It is true that all these problems have not been solved and that control is sometimes difficult or impossible, but in the majority of cases there is an effective, simple, cheap control for insect pests which attack flower plants.

Before any attempt is made to control any insect, it must be determined whether the pest is a chewing insect or a sucking insect. All such pests fall in one of these two classes. Chewing insects such as caterpillars, leaf-eating beetles, grasshoppers, etc., are controlled by applying a stomach poison to the plants, such as arsenate of lead. In the case of sucking insects a contact insecticide must be used; such as nicotine sulphate. Sucking insects such as plant lice or aphids, thrips, scale insects, etc., are not controlled by stomach poisons, as they suck their food from within the plant. A contact insecticide kills by contact either through its burning action, poisoning through the breathing pores, or by suffocation.

Insecticides can often be applied as either a spray or a dust, but in some instances it is necessary to use a liquid spray for results and in other instances dust is best. Care must be observed in properly mixing any poison, as the plants may be severely injured if an insecticide is applied too strong. Do not spray or dust promiscuously. Use only the recommended poisons in the right proportion. Applications must be applied thoroughly and at the proper time. Remember that poisoning is a control and not an eradication. One can not hope to destroy all the pests for the whole season. Therefore, in many instances, several applications will have to be made to protect the plants.

A satisfactory spray for most chewing insects is as follows:

Three teaspoonfuls of arsenate of lead and one gallon water, or five teaspoonfuls magnesium arsenate and one gallon water.

For plants having glossy or smooth leaves, a small piece of soap (one ounce) can be added to the spray to help the poison to adhere to the plant.

Although the above proportions are recommended for most plants, tougher plants will stand the spray twice as strong. It must be borne in mind that delicate and bright-colored flowers are subject to injury by the stronger sprays.

A satisfactory dust for most chewing insects is:

One ounce (or one part) arsenate of lead and 4½ ounces (or 4½ parts) hydrated lime; or one ounce (or one part) magnesium arsenate and three ounces (or three parts) hydrated lime.

For sucking insects the following poison is recommended as a spray:

Nicotine sulphate, 1 to 1½ teaspoonfuls; water, one gallon.

As a dust:

	10-oz. lots	5-lb. lots
Nicotine sulphate	½ oz.	¼ lb.
Hydrated lime	9½ ozs.	4¾ lbs.

Nicotine dusts should be used immediately after being prepared or

stored in an air-tight container.

In applying contact poisons one must remember that the material must actually come in contact with the body of the insect.

Lime sulphur or oil must be used to control scale or mites on shrubs.

Care must be observed in using any insect poisons. Children should be kept away from such poisons. Household pets or any other animals should also be kept away from them.

For spraying, small air-pressure sprayers will be found most desirable. For dusting, small blowers can be used.

Fertilizer Trials in Grant County, Indiana

By M. D. Butler

County Agent, Marion, Indiana

AS they improve both the feeding value and quality of corn, as well as the yield, potash and phosphorus have repeatedly proven their worth in a series of field demonstrations conducted by men cooperating with the extension service in Grant county, Indiana. These trials have run over a period of three seasons and for conditions as found in that part of the corn belt, prove the value of potash.

In 1928 the county agent established several trials on different farms. On each of these farms livestock is fed and clover grown in each rotation. The feeding methods of farmers in this locality ordinarily are sufficiently heavy to require importing feed to supplement native grown crops. This practice has been going on for years and now presents a situation different from that in localities practicing the selling of cash crops annually. The continued sale of pork and beef has naturally depleted the phosphorus supply of the soil to the point where this element is a limiting factor in growing either a grain or grass crop, and for several years leading farmers have been fertilizing their wheat and seedings. It has been only recently, however, that a similar opinion prevailed in reference to potash.

The trials of 1928 on corn gave as much evidence in favor of potash as in favor of phosphorus, while the results of the 1929 trials are still more favorable for the use of potash. Some of the local cooperators attribute this to "too many heavy tractors," or the "excessive spring rains of 1929," supposing that these facts locked up available potash, making the benefits of the applications of muriate of potash more noticeable.

For example the demonstration on the farm of John Scott in 1929 showed the check plots produced an average yield of 65.3 bushels per acre, a 3-0-16 produced 66.7 bushels per acre, a 3-12-0, 59.3 bushels per acre, and an 0-12-12 produced 70.7 bushels per acre. This being a well-managed soil naturally high in nitrogen, it was not surprising to notice a loss from the use of nitrogen. However, it was surprising to notice an increase of five bushels per acre in favor of an 0-12-12.

During 1930 the results of the tests were similar, in that they indicated a more than expected advantage in favor of potash and in all but one test showed a loss when nitrogen was used on good land after a crop of clover or sweet clover. On the poorer soils of that region nitrogen showed a quicker early growth but no corresponding increase in yield.

Horse Radish

(*From page* 30)

inches long are planted in a slanting position of less than 45 degrees and the top of each cutting is placed three inches below the level surface of the field. The soil should be firmed well about the newly planted roots. This is done so that the roots will not have a chance to dry out and so that they will begin to grow as soon as possible. The slanting position is used in planting so that the roots will come in contact with as much of the surface soil as possible. This is especially important when the surface soil is shallow.

It is important to remember that root cuttings are fixed in their habits of growth. The new roots always grow out of the end of the cutting which was growing downward at the time it was dug the fall before. On this account the root end of a cutting is always cut off obliquely and the stem end is cut at right angles to the long way of the root at the time it is trimmed from the mother root. Another item worthy of mention is that unless all the roots are removed from the field at digging time there is very likely to be a volunteer crop the following spring.

As to horse radish varieties, the Maliner Kren or the Bohemian are supposed to be superior to the common kinds. But the best method of solving this problem is to start in a small way with the best roots obtainable and select side roots from the longest, fleshiest, whitest, and most desirable roots each year. Constant selection will usually result in an improved strain of horse radish. Commercial supplies of root trimmings are usually hard to find. It is largely a matter of each grower saving his own supply.

A full growing season is necessary for a large yield of horse radish. The plants are very hardy and will stand temperatures somewhat below freezing. Since the upper end of the root is planted three inches deep, it is sometimes found that a crop of early cabbage can be grown on the same field. Such a practice may prove unprofitable, however, if the soil is lacking in organic matter or fertilizer in amounts sufficient to meet the needs of companion cropping.

As soon as the cabbage crop is removed, the horse radish crop is kept free from further competition. Companion cropping would have a greater chance of succeeding if water could be supplied through surface irrigation, subirrigation, or the overhead method of irrigation.

All weed competition in a horse radish field must be eliminated early in the season. Weed control is the main reason for cultivation. If the growth of weeds is effectively prohibited from the beginning and if the upper inch or two of soil is loose and free from soil cracks, the horse radish crop will do as well as the other fac-

A quick-maturing vegetable can sometimes be planted as a companion crop with horse radish. Early cabbage is an example.

tors controlling it will permit. Shallow, level cultivation, often enough to control the weeds, is usually all that is required in a deep, fertile soil.

Some professional European growers trim the side roots from the main roots during the growing season in an effort to obtain a larger number of high quality, saleable roots. The object can be accomplished, but the risk of damaging the crop is great.

Planting distances used in horse radish production are usually 10 to 12 inches between the plants in the row and three feet between the rows. The plants grow to a height of about two feet. The leaves are arranged in a rosette and they are erect, long-stemmed leaves with dark green, narrow, tough leaf blades.

At the season's end the roots are usually plowed out and the tops and side rots are trimmed off. The latter are saved for the next year's plantings. The fleshy, main roots are washed after they are trimmed and are marketed in barrels. The crop can be stored until needed by holding it in a cool, moist place. It is important to see that the roots are kept from shriveling as this lowers the quality and the amount of money which they will bring when marketed.

The side-root trimmings which are to be used the next season to set out the new plantings are marked at the time they are removed from the main root so that the grower will always be able to tell which end to place down and which to keep toward the surface of the soil. The top end is always cut off squarely and the other end receives a slanting cut.

The roots are then tied in bunches and packed in moist sand. They too are held in a cool, moist, root cellar until the following spring. Roots can be left in the field all winter although this is rarely done. Two-year old horse radish roots become woody and so are of poor quality.

Average yields are poor standards to go by in the vegetable business because such yields usually are just high enough to pay for the cost of production on the several crops. To enter the horse radish business in a big way because of rumored large scale profits is hardly advisable. This would be especially true if only average methods were to be employed.

The best of cultural care, including the use of generous amounts of fertilizers and manures, will usually produce far better than average yields. If added to these factors there is a naturally deep and fertile soil available in a climate where the growing season is 140 or more days long there should be little trouble in making a reasonable amount of horse radish acreage profitable.

Potash Scrapbooks

(*From page* 24)

To the boys and girls of Michigan, Burt Wermuth wrote:

"There are two important reasons why a boy or girl should develop the habit of making scrapbooks. The first is that it fixes the habit of looking for things or ideas—the spirit of the pioneer, the discoverer, the inventor, of all those men and women responsible for the progress of the race. Then the material in a good scrapbook must be classified, that is, put in where it belongs. Now, people who keep on finding new things or ideas and know the proper place to put them just naturally become the most useful and valuable citizens in any

community or nation."

"There are many values derived from keeping a scrapbook," Mr. Gallup wrote addressing the boys entered in the Potash Scrapbook contest.

"1. It keeps one mentally alert for everything that is said and written upon the subject of his major interest.

"2. It leads to a careful organization of the thoughts expressed upon one's major interest.

"3. The accumulation of information after a period of time is surprising and satisfying to one who keeps a scrapbook.

"4. For the student, it gives an opportunity to organize material so it is easily accessible and in the form in which he can make best use of it."

The potash scrapbooks submitted were judged by Dr. C. E. Miller of the Soils Department, Michigan State College, Professor W. W. Johnston of the English Department, Michigan State College and Burt Wermuth, editor of the *Michigan Farmer*. They were graded on five points: initiative, completeness, neatness, arrangement, and thoroughness.

The eight boys who were awarded trips to the Future Farmers of America convention at East Lansing were: Archie Potter, Mesick; Leslie Hughes, Jonesville; Emmer Mathias, Mancelona; Wayne Wibirt, Reed City; Glen Slucter, Hermansville; Frank Denning, Jonesville, and Clair Gregory, Harbor Springs.

Rejuvenating Abandoned Farms

(*From page* 28)

been leased to a number of neighbors, due to the fact that it was impossble to get a good class of renters interested, as the soil was depleted, the fields gullied and full of cockleburs, and the improvements inadequate for the proper kind of tenant. The landlord's net returns for the year of 1925 were considerably less than $1,000. This was discouraging, but an arrangement was made with Mr. Dahl whereby the landlord would furnish commercial fertilizer and sow mammoth clover. On the most depleted soils mammoth clover aided by commercial fertilizer increased the fertility to a degree which in a course of three years more than tripled the production of this land. In fact, the year of 1928 showed a gross return to the landlord of $3,465.07, and since then this has been one of the outstanding farms of that locality in the way of production. Mr. Dahl is still occupying the property, has eradicated the weeds, built up the soil to a high state of productivity, and has taken considerable pride in keeping the premises in good condition otherwise. Mr. Dahl's returns from the land were even more than those of the landlord, as he received three-fifths of the small grain while the landlord only received two-fifths share.

Since an income of $1,600 on the farm is equivalent to a $3,000 income in the city, it is easy to evaluate farm possibilities versus city opportunities—the man considered. Manual effort and hard work applied to farming will usually reward a man more than the same energy sold for a wage. The reason is that a farmer does not have anyone making a profit on his labor. The profit of his enterprise is his own. He loses his maximum return, however, as many frequently do, when they sell their wheat for a cent a pound and then buy it back as bran and other feed at one and one-half cents a pound.

Again, farmers of this country who are fertilizing their pastures and think in terms of cows per acre are not seeking or even thinking about the agricultural problem. On the other hand, in localities where the farm is viewed in

terms of acres per cow and a belief that as many as 30 acres per head are required, the cost of production of milk and meat cannot lead to anything but a farm problem.

The art of soil management the world over, but especially in the United States, is rapidly coming into a new level of efficiency. Pioneers, such as Leibig, a hundred years ago wrote the primer which told the story of the importance of N. P. K. (Nitrogen, Phosphorus, and Potash). It has always prevailed that great teachers are invariably ahead of the masses. Hence, it is not surprising that even today we find agricultural authorities stating that in certain parts of this country farmers are still only in the phosphate stage as regards the proper use of plant foods. Only market gardeners and a few of the most advanced staple crop farmers have, as yet, learned how to properly employ complete fertilizers containing, in addition to N. P. K., those other essential elements which Dr. Oswald Schreiner and others of the present generation have demonstrated are beneficial to crop growth.

Farm Practices Changed

Indicative of the changes in farm practice which have been tried and found sound, during the memory of the writer, may be mentioned the method of cultivation to conserve moisture. Movement of moisture by capillarity in the soils was once considered of major importance. Frequent cultivation of hoed crops was at one time recommended to conserve it. Today farmers cultivate, to be sure, but they scratch the surface only sufficiently deep and only when needed to destroy weeds. In other words, every farmer now realizes that weeds remove far more moisture from the land than evaporates from the surface.

In the matter of soil fertility management, there have developed equally startling changes concerning what is considered economic. The time was when farmers were taught to build up the fertility of their land toward some undefined goal. Incidentally, wherever this advice was followed it benefited the soil to be sure, but the farmer not so much. Today, on the other hand the most respected agricultural colleges and experiment stations offer as their advanced recommendations, that the crops grown and not the soil should be fed.

In other words, high school graduates in agriculture are made to see that if, for instance, the soil of a farm is inherently capable of producing 50 bushels of corn and the farmer desires to raise 70 bushels to the acre, he can do this quickest and with the most profit by applying enough commercial fertilizer when planting his crop to make the extra 20 bushels. In succeeding seasons he will find it pays to repeat the process. Thus, the old rule for sound farming of the past wherein the back-breaking, expensive practice of treating the land with tons of pulverized stone and turning under gold dollars in the form of green manure crops, with the exception that the tilth of the land would be improved, is today recognized as uneconomical. Everyone now knows that if immediately available commercial fertilizer increases yields of grain, the land itself will be enriched at the same time, not only by the large crop residues returned to the soil, but by the fertilizer residues as well.

The Ohio Experiment Station shows that the effect of adequate applications of commercial fertilizers are enjoyed markedly at least throughout a four-year rotation. At the West Virginia and Rhode Island Experiment Stations it has been demonstrated that where necessary yields can be profitably maintained and the humus of the soil actually increased without applying any farm manure but employing fertilizers only. Hence, regardless of the type of agriculture, soil fertility can be permanently maintained, and even where lands have been abused, they can be rebuilt by the intelligent use of commercial fertilizers.

Sunflowers for silage and potatoes are grown at the Northeast Minnesota Experiment Station.

The Arrowhead at School

(*From page 26*)

walls of the station auditorium. The farmers themselves form a service group of "Minute Men" in rural progress.

The Junior Honor Roll is a recognition with diploma of the 4-H boys and girls who have led their respective counties, sometimes the State, in such enterprises as potato or garden culture, calf or sheep rearing, sewing or baking.

The Community Honor Roll is an effort to bring to the group the same recognition for community advancement that has come to the individual for personal accomplishment. For example the judges awarded the Lakeland Farmers Club the Reclamation Trophy because they did the best job of reclamation in all the Arrowhead. They cleared 300 acres of land. The Breeders Trophy went to Twin Lakes Club, Carlton, for the best job of livestock improvement. Here 16 herds are ready to be accredited as free from abortion.

The Arrowhead is in transition from forest to farm. Conifers yield to clover; barley supplants birch; potatoes replace pine. These changes cost heartaches and discouragements. It is right in itself to recognize merit and reward it. And if it awakens hope and ambition in others; if it renews faith in the industry, the land and homes in this northern frontier, it is worth all its costs.

Testing Pastures

(*From page 6*)

The treatments varied with the different farms, and all materials were purchased by the farmers. The grades included a 4-12-4, 5-8-7, 5-10-10, 10-8-8, 8-8-8, 10-16-14, and 8-16-16. A requirement of 30 pounds per acre of each of the plant foods was used as a minimum. All of these paid the farmer a good return on his investment, varying in returns from $12 to $122 per acre over the unfertilized check plot. This return was after all costs

for fertilizer, labor in spreading, and cost of grain and other supplemental feed were deducted.

The drought had a part to play on some of the lighter soils, decreasing the number of grazing days. This was true in the two Connecticut tests and one in Massachusetts. All of these got away to a good start in early feed, but were slowed up as the season's dry weather continued. This would indicate the need for very early spring application on the light soils, so as to get the maximum measure of the fertilizer applied.

The three winning tests in the New England section were on good sods, which had a reasonable amount of moisture. Waveney Farm, Framingham, Massachusetts, won the contest in this territory. They applied a 10-16-14 fertilizer on April 1 at the rate of 400 pounds per acre. The sod was at least 50 per cent clover and had recently been in mowing. Their return was $122 per acre. At turning-out time there was 5,592 pounds more green grass per acre on the fertilized than on the unfertilized plot. Full details on all the tests are being published in bulletin form and will be available at an early date.

It would seem to be good farming practice to consider the pasture area on the farm one of the most remunerative crops when properly managed. Years of continuous grazing have mined the plant food from the soil and very little has been returned. The plant food removal of many years cannot be returned in one application of fertilizer. It will have to be a process for rebuilding for future years. Many farmers of today have proven beyond question that it is possible to lower the area of pasture per cow one-half and even to one-quarter the present requirement by liberal fertilization and intelligent management.

There should be no one plan recommended to fit all cases and each farmer should be encouraged to fit a plan to his needs and approach the question with an open mind. The simple plan, however, of fencing and fertilizing the pasture, using only the better sods and rotating the dairy herd, will go a long way in helping him reach the ultimate goal of *Better Pastures.*

The Inquiring Mind

(*From page* 17)

scientists must have been welcome and valuable. Professor Troop recognized that it is most important for every experiment station official to keep in touch with the work of others in the same line of research, and that the comparing of notes and exchange of ideas and experiences is of great mutual benefit. That, today, is as necessary and important for all experiment station workers as it was in the early eighties.

Noting that the severe winter of 1884-5 seemingly increased the hordes of injurious insects, Professor Troop gave the matter serious consideration. Leaf-rollers had greatly damaged strawberries; saw-flies had stripped the leaves from raspberry bushes; and the currant saw-fly, plum curculio, and codling moth were present in undiminished numbers. These pests, therefore, were studied and combated. There was, also, at that time a widespread difference of opinion among horticulturists regarding the effects of cross-pollination in strawberries and raspberries; therefore, Professor Troop undertook experiments with 12 different varieties of each and ascertained some

facts of scientific and practical value.

Old records state that in October, 1884, the most interesting feature of the agricultural exhibit at the Indiana State Fair was a collection of injurious insects arranged by Professor Troop. In December, 1884, it was reported that Professors Warder, Latta, and Troop represented Purdue at the annual meeting of the Indiana Horticultural Society. On that occasion Professor Troop read a paper entitled, "What We Owe to the Entomologists," after the discussion of which a resolution was adopted requesting the Legislature to enact a law creating the office of State Entomologist. That request was granted, and it is interesting to note that in 1899 Professor Troop was appointed to that office in which he ably served until 1905.

Received Honors

In 1895, Professor Troop was elected secretary of the State Horticultural Society, which position he held until 1902. It was in recognition of his services as secretary and his valuable contributions to the programs of its meetings for many years that the Society on January 14, 1931, presented his portrait to Purdue University.

In 1917, the leading orchardists of Indiana called for a spray calendar for the codling moth. Up to that time there was supposed to be a distinct interval between the first and second broods of this orchard pest. Professor Troop, with the cooperation of his former students, conducted a series of experiments in a number of scattered orchards throughout the State and as a result found that there is no distinct interval between the late emerging codling moths and the earlier moths of the second brood. As Professor Latta has said: "Professor Troop was the first entomologist to demonstrate the fact, by a series of experiments, that there is practically no break between these broods, thus making the breeding season of this insect a continuous performance from early spring until fall, making it advisable and necessary to keep the spray pump going throughout the season."

Among many other creditable activities of Professor Troop were some important experiments relative to fertilization which he directed some years ago. They were conducted by Dr. William Stewart and have been pronounced by Professor Laurenz Greene, present chief in horticulture at Purdue, "as one of the first and most important contributions to our knowledge of fertilizers for greenhouse plants." Professor Troop has also written many instructive bulletins and reports on horticultural and entomological subjects and in 1911 was the author of a valuable text-book on "Melon Culture."

As secretary of the State Horticultural Society, he received honorable mention for the exhibit provided by the Society at the Paris Exposition and a medal of honor for an exhibit in horticulture and entomology made at the St. Louis Exposition. He acted as judge of the horticultural exhibits at many fairs, including the St. Louis Exposition, and lectured acceptably and instructively at numbers of meetings in Indiana and elsewhere. For several years he was secretary of the Association of State Entomologists.

Sought No Notoriety

What has been said partially tells the story of the long years of service rendered by Professors Latta and Troop. They have willingly and satisfactorily worked quietly and unassumingly, without seeking notoriety, thanks, or applause. They say little of themselves, but a host of ex-students, farmers, orchardists, educators, and research workers esteem them for their multifarious accomplishments, versatile abilities, sterling integrities and lovable natures.

Of each of them we may say, in the words of Shakespeare:

"He was a scholar, and a ripe and good one;
Exceeding wise, fair spoken and persuading."

Potash-Minded

(*From page* 18)

supplement our program of encouraging a practical system of soil improvement. For three years the Agricultural Department of the Chicago and Eastern Illinois Railway has operated soil testing trains over its lines in cooperation with educational agencies. Thousands of samples of soil have been tested for lime and phosphorous needs for hundreds of farmers in 24 Illinois counties. In addition to the trains, the railroad maintains a free soil-testing service at Danville, Illinois, for all farmers living in territory along its lines, and farmers are continually availing themselves of this opportunity to have their soil tested without cost.

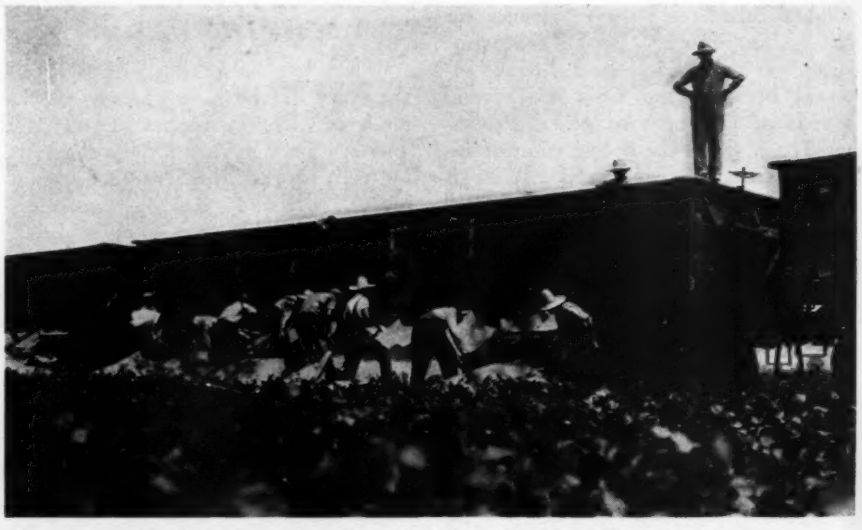
During the year 1929 the soil-testing cars stopped at 48 towns, but during the year 1930 they were not operated over such a wide territory. Previous to the scheduled stop of the train, farmers in the vicinity of the station were notified by letter of the soil tests the train was prepared to make, and generally when the train pulled in, it was met by a crowd of farmers, each with a box or basket of small sacks containing soil samples.

The laboratory car was equipped for testing about 500 samples at one time. On one side there was a long counter, holding racks for the testing bottles. Potassium thiocyanate was used in testing for acidity and the Bray test in testing for available phosphorus. In addition a number of tests for potash and nitrogen were made on cornstalks by the Hoffer method. These tests resulted in the farmers getting complete and accurate reports on the lime and plant-food requirements of their fields.

Farmers Learn to Make Tests

Since the testing of soil samples by these methods was quite simple, the farmers were invited to assist in the work, and many made their own tests under the supervision of the soil specialists on the car. Farmers brought in from one to 220 samples each.

Proof of the effectiveness of the soil-testing work is evident from the



This trainload of limestone is being unloaded on right-of-way from side-dump cars.

records of limestone and commercial fertilizer carload shipments unloaded at stations on the C. & E. I. Railway, which show a 58 per cent increase for limestone and a 47 per cent increase for fertilizer in 1929 over 1928. During the year 1930, the increase was not so great, due principally to the drought and depression in agriculture, but showed an increase of 20 per cent in limestone and 28 per cent in commercial fertilizer tonnage over 1928. In addition, a large tonnage of ground phosphate rock was used. Phosphate rock has been popular with Illinois farmers for a number of years.

Limestone occasionally was handled in train-load lots. These special trains were stopped at any point on the railroad convenient to the farm, where the landowner was permitted to unload his limestone, in some cases just across the fence from the field on which it was to be applied. The limestone was loaded in side-dump cars and all farmers having cars in the special train cooperated in getting it unloaded on the right-of-way.

We are now cooperating in field demonstrations with potash and various fertilizer mixtures on various crops on different types of soil. Field meetings of farmers in the communities where the fertilizer demonstrations are located will be held when the plots are checked for results.

Behind the Farm Microphone

(*From page* 12)

ture's radio service to the thousands of listeners who have been brought from isolation to within the current of modern agricultural progress. With its plan of acting also as the mouthpiece for nearly every important branch of organized agriculture, the Farm and Home Hour presents a startling coverage of the nation's agriculture packed into brief daily periods at a convenient time.

The broadcast every Saturday noon is devoted to a special program by one of the important farm organizations. The schedule for 1931 will bring a National 4-H club program to listeners on the first Saturday of each month in addition to musical periods by the United States Marine Band. During 1930, club members from 17 States appeared before the NBC microphones for these programs. The American Farm Bureau Federation presents a program on the second Saturday; National Grange, third Saturday, and Land Grant Colleges, fourth Saturday.

Of outstanding seasonal interest is the National Farm and Home Hour plan to bring to the radio audience direct reports of important agricultural events such as the International Livestock exposition, National Dairy show, American Country Life conference, National Corn-husking contest, and many others.

Attracting unusual interest, the National Corn-husking contest for 1930 deserves comment. More spectacular than many leading football games, this greatest of all farm sporting events attracted 40,000 spectators who are but a handful compared to the number who heard an "ear by ear" account of the huskers over the radio. Staged in western Kansas, only 60 years ago the last frontier where Indians battled to quell the invasion of settlers, the corn-husking event presented less hardship but probably more thrill than did the battles of early Homesteaders in the Jayhawkers territory.

Following the huskers with microphone in hand, Wallace Butterworth, the Farm and Home Hour announcer, gave one of the most picturesque descriptions of a sporting event ever broadcast while a mob of people covering the productive, well-managed

Kansas cornfield watched their favorite contestant as he progressed down the long corn rows hitting the bumpboards at a feverish pace in an effort to bring the championship to his home state. Probably no more colorful display of farm sporting interest has ever been shown, and although 40,000 watched the event, many more thousands would have lost a wholesome thrill but for the employment of radio to bring a simultaneous description from away out on the Kansas plains to their homes in the East, South, West and North.

Entertainment programs on the air perform a service for country folks which is unparalleled. They have been instrumental in bringing about an appreciation among rural people for the best in music, and have served to make many hours in isolated farm homes happy and enjoyable.

These principles are not forgotten in planning the National Farm and Home Hour which has been referred to as the "Nation's Bulletin Board of Agriculture," and many a wearisome statistical talk of importance has been attentatively heard because the audience knew it would be followed by a choice bit of entertainment.

Among the artists who contribute to the broadcasts especially planned for country folks are well-known orchestras, singers, soloists and dramatists. Numbers are chosen to appeal to as wide an audience as possible, and the nation-wide radio period serves to bring about a feeling of close relationship among farmers separated by many miles—tillers of the soil with different problems, but all with the same eagerness to learn, and with a common source of livelihood from the wide expanse of farming territory. Truly, radio is playing a major part in serving an American farming class that is responsive to teaching which, when applied, finds responsive acres.

Speaking of Publicity

(*From page* 22)

and looking at things from the other fellow's view-point. What does the typical country citizen know about this demonstration? Does it have any interest or importance for anybody else? What would the town citizen think of it? These are good questions to ask in achieving a perspective of one's work. Whether it results in a news story or not, it is a good habit to acquire. News is anything interesting and timely, and the more people it will interest the bigger news it is.

Perhaps a greater pitfall of agents who aspire to cooperation with newspapers is the expression of opinions in news stories. To be self-centered is a human frailty, and Americans are natural propagandists. We are forever wanting to educate someone, which usually means that we wish him to adopt our views. Extension work seems to have been intended as a form of education in which the farm people educate themselves through demonstrations of their own making. The part of the local newspaper would then seem to be the circulation of ideas born of demonstrations to the end that demonstrators be increased until a body of growing, thinking, self-reliant sovereign citizens is developed, capable of leading itself and of solving its own problems.

At any rate expression of opinion in news stories is bad journalism. Editors oughtn't to print them. If they do it's because they are big-hearted, or that they, too, believe in exhortation as the plan of rural salvation. The editorial column is the place for opinions. As long as agents subject themselves to the rules of the newspaper game by submitting to editors nothing but

A. B. Jolley, Dallas county farm demonstration agent, gets the record of a leading poultry flock demonstrator for publicity purposes. The story of how H. H. Jobson (left) developed a flock of 750 white leghorns that laid an average of 120 eggs each in the first eight months of the year to lead all the demonstration flocks in the county is the kind of news that builds better farming.

straight news to be used and placed as is other news, according to its news value, they need never fear of overdoing newspaper pubilcity. On the other hand, one opinionated propaganda story is one too many.

There it stands, the country newspaper, a power of varying degree, but always potentially strong, in 90 per cent of counties in which Extension work is done. Whether one passes by on the other side, or manfully tries to do his part in using the tools at his command to build a better country life, the small weekly newspaper still remains, amidst all its confusion of ink pots, a symbol of progress and an opportunity for service.

Prepare for Weevils

(*From page* 19)

Weevils can cause just as much damage in North Carolina as any other cotton State, and just as often as we have frequent rains in July and August, we are going to have to dust cotton to control the boll-weevil.

There is no way of predicting boll-weevil damage. Our winters are not cold enough to prevent sufficient weevils from coming out of winter-quarters to cause very serious damage. The weevils breed rapidly and though few emerge large damage can result when conditions are favorable during July and August.

There is a machine for cotton dusting suitable for every type of land and every size acreage. If you buy a machine be sure to get a good make suitable for your own conditions. Do not buy a worthless machine; there are several good makes on the market. See your county agent about a good machine and poison. Growers are urged not to put this matter off until the last minute. There is a marked tendency to think nothing of the weevils until they begin to show in the field; then we see all kinds of articles in the papers about farmers being "alarmed"

at weevil damage. *There is no reason for alarm. The weevil is nothing new and it is here to stay.* Therefore, the quicker we become acquainted and prepared for weevil control the better off we will be. The boll-weevil will be present as long as there is any cotton grown in the South, therefore, why not consider the problem seriously.

Fruit growers must spray each season if fruit is to be harvested. Practically every crop grown must be protected from insect damage. Cotton is no exception and the quicker we realize the importance of intelligent weevil control methods, the sooner we can count on a full yield of cotton.

Insect pests collect a tax of over $2,000,000,000 in the United States each year. How long will the South continue to contribute large sums to this huge tax?

Come to the Wedding

(*From page* 4)

apparently it was the public custom, just like discussing the Farm Board is with us in the corn-belt.

I think I understand it. Parlors are getting scarcer and flats are getting tighter with less room for sentiment, so that the cave dwellers are driven to prehistoric customs in search of mates.

I can sum it up by saying that our courtrooms are overcrowded because our courting rooms are not so plentiful at home as of yore! A fellow really ought to get acquainted with a girl in the vicinity of the dining-room and kitchen, even if he has to argue a couple of hours with the old gentleman before he tires him out and retires him. It sort of adds the perspective for prospective matrimony to hold hands with Her in the corner underneath the enlarged crayon picture of her grandmother.

I do not bemoan this nightly wandering of romancers because of the higher cost of refreshment obtained outside the domestic zone, although it also has to be considered in dull times. But I refute the charge that nuptials are consummated best in a sea of sodas or that dance marathons induce permanent felicity.

But I suspect that we are going to have weddings even in years of suspended circulation of coinage. I don't disapprove of petting in poverty, and indeed it might act as a real antidote to some of that easy-street romance that has taken so many of our good nuptial intentions into the scrap heap.

Some of us who got spliced on fifteen dollars a week and lived through it without busting any dishes at each other are in a position to advise others that a poor beginning makes a populous ending. I have a friend who enjoys twenty years of wedded life and eight children, and his wages have never been up to the Lithuanian union scale. Yet he smiles broader and laughs louder and easier than another friend of mine who was born with a silver spoon and married a diamond tiara! It isn't how much you marry, nor how often, but how well.

In fine, I think that marriages begun in times when the economic index curve is worrying the furniture dealers may possess certain distinct advantages to the high contracting parties. Wages will be low, but waste will be less. Jobs will be scarce, but baby carriages will be cheap. In any case it's disposition more than depression that eclipses the honeymoon.

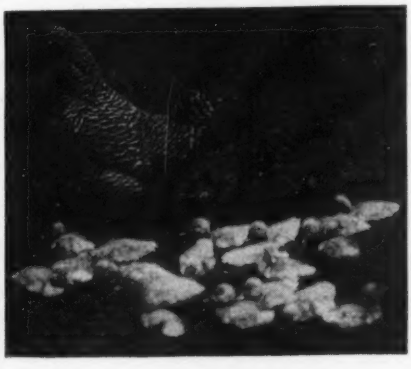
Marriage is pretty much of a tragic tension, according to Count Hermann Keyserling, who sees the chief solution of it in a gradual growth of the spiritual essence of humanity rather than a continuation of the exalted Ego. I am happy to learn that he is not entirely despondent about this universal custom of civilization, and if he is not ready to give it up as a bad job, fel-

lows with limited experience in matrimony certainly should not be pessimistic.

Experience, by the way, doesn't always seem to count for as much in matrimony as it does in plumbing or in teaching farmers how to farm. In fact, it often seems to be the ones with the least experience in wedlock who claim to know best how to make it work successfully.

This particular contribution to the world's digest will carry no hints on the following things, to wit: farm relief, stock market tips, outlooks in economics, or advice to the love-lorn or the love-worn. In great jeopardy I might assay a fling at one or all of the first three subjects, but the Egyptian sphinx would be a Will Rogers of loquacity compared with me on the subject of matrimonial advice.

I recall with mixed feelings the episode that happened to my aunt when she sympathized and condoled too forcefully and frequently with a neighbor lady over an "indulgent" husband back in the pre-Volstead era. My poor aunty took things too literally and came back a trifle too strong in her condolences. Although my aunt wanted to assign the case to the Associated Uplift Agencies, she herself came out in need of the Red Cross. She took the solemn oath of non-interference wearing bandages. This shows that an outsider is no judge of the wearing qualities of the nuptial knot. Whether it is a clove-hitch, a slip-noose, or a scaffold-bend makes no difference to the casual third party.



Boarding-houses are probably responsible for more marriages than any any other single agency. It is the general procedure for making surveys to study well the causes that lead to certain conditions. Sentiment would be rejected in any business survey, so we must take it for granted that love sickness is not so much a cause of wedlock as indigestion and unlovely hall bedrooms.

I recall five young college instructors of robust mien who entered with me upon a deliberate boarding-house pact. They had never heard of Doc Wiley's famous poison squad and the dire results of being research victims in the pure-food campaign. No more hearty set of fellows were ever assembled around a squawky phonograph than those ambitious boys. They each and severally abjured matrimony and wanted to wait with patience until their dream-ships came to port laden with the visions of a voyage.

I WAS the first to succumb, perhaps being a weaker vessel. They gave me an easy chair for a wedding gift. One by one these men have either died or gone into matrimony. The local minister walks by the boarding-house every day, ready to rush first aid to the latest victim of the system. He is there either to administer the sacrament or ease them gradually into better rations via the bridal-biscuit route.

When you attack the first attempts of a young woman to balance rations for a husky young man on the Wolff-Lehmann or the Savage feeding standards, you are missing a nice point. The tough and leathery nature of boarding-house provender requires a certain gradual adaptation when one enters the relatively more congenial cuisine. By the time Wifey has become an adept at mixing batter and biscuit dough, the toxic effects of the erstwhile menu have worn off. Furthermore, the bride who can cause a too sudden change for the better in the young husband's rations has such a cruel cinch on the

saddle that it becomes galling. Humility for the bride and hunger for the groom is essential to the national transition from boarding to housekeeping.

"Living with the old folks" is the thing that puts quickest the tarnish on the wedding silverware. I doubt if it is any improvement over boarding-houses. In a boarding-house one quit on ptomaine reasons or cuss at the waiters. But when you sign up to join a ready-made family, you reef yourself in a couple of granny-knots, not to mention the proximity of that joker's favorite, the dominating mother-in-law.

Although I learn that present, dull economic conditions are forcing more such doubling up of families, I believe it is a mighty poor way to cure the depression. It's simply taking a quiet little boxing-match and turning it into a war zone! I am confident that "there should be a law, etc.," so I may turn it over to our legislative committee on public welfare. One law more won't make such a radical difference in the ultimate enforcement anyhow.

LONG engagements likewise should be made illegal. Too many, old, bachelor choir singers are claiming exemption because they have proposed and been temporarily accepted. Although it doesn't ease them off any on the income tax, it gives them a sort of immunity that galls the one in fetters. Inviting these selfish suckers out to dinner never seems to hasten the desired climax of conjugality. They will praise the roast and ask for recipes, but that's about as far as it gets with them.

Speaking again of long engagements, I have appended a list of such miserable exhibits that abound to tantalize us and interrupt our economic slumbers. Herewith a list of postponed marriages is given, a list that will stir the ire of all respectable citizens, and make them wish for justices of the peace in shoals and ministers of grace to defend us.

These flirtations have been going on long enough. The bans have been pronounced in public and the orange blossoms are withering for want of the ceremonial. I would be willing to "give them away" and buy the rice to douce them with. So would you, as per the following citations:

Labor and Agriculture.—Supposed to be well mated by natural experiences and kindred lives, yet pulling apart and refusing to unite for the general public welfare. The eight-hour-day, the lazy hired man, and the lock-out are obstacles.

Statesmanship and Politics.—Said to be of the same racial stocks, desiring the same results, and both eating at the public crib. Chief obstacle, expediency.

Starvation and the Surplus.—Settlement of a suitable dower would solve a national problem. A case for the police or the hospital. Shortage of means no obstacle.

Schools and Education.—Supposed to be married already, but probably a fake wedding. Children half-baked and very ungovernable. A sad case for the clinic.

Farm Relief and Agricultural Stability.—Love at first sight and remorse subsequently. May yet be united if their relations are kept out of it.

Prohibition and Temperance. — A little too much of the old Adam and a mixture of the ancient Eve. Will be a splendid wedding in the Garden of Eden at the Millenium.

I was almost tempted to add Essay Writing and Solving the Nations' Problems or even Better Crops and Plant Food, but the hopes for the latter are so bright that they do not belong in the list of the standpatters.

SO good luck to you all this fair June day, whether you are sending or receiving engraved stationery. I have got through a difficult subject without dipping into biology, which is more than can be said of some folks.

MORE EVIDENCE

Judge (after charging jury): "Is there any question that any one would like to ask before considering the evidence?"

Juror: "A couple of us would like to know if the defendant boiled the malt one or two hours, and how does he keep the yeast out?"

During an intense love scene in the movies, when the hero was doing his stuff, wifie nudged hubby and said:

"Why is it that you never make love to me like that?"

"Say," he replied, "do you know the salary that guy gets for doing that?"

AGREED

Prospect: "I can't see you today; come back Friday."

Salesman: "I won't be in town Friday."

Prospect: "Neither will I."

Telephone Operator: "I have your party. Deposit five cents, please."

Souse, at pay station: "Whazzat?"

Operator: "Please deposit your money."

Souse: "Listen, girlie, wat I wan's a conversah'n from a fren', not financial advice from a stranger."

—*Wright Engine.*

"Keep away from that there loudspeaker thing, Alfie," said grandma, sternly, "that fellow what's speaking has got a nasty cough."

INQUISITIVE MEN

Daughter—"I'm sure you will like Jack, father. He's a fine young man."

Father—"Has he got any property?"

Daughter—"Oh, you men are so curious. Jack asked me the same thing about you."

Gentleman (coming round the corner): "What are you putting that muzzle on your little brother for?"

Tommy: " 'Cos I'm sending 'im for some candy."

IN A ROSY FOG

"Next to a beautiful girl, what do you think is the most interesting thing in the world?"

"When I'm next to a beautiful girl, I'm not worrying about statistics."

Sir Harry—"Man, Sandy, you're not looking a day older since I saw you last season. What would be your age now?"

Sandy—"Weel, I count ma sheep and I count my siller, but I never count ma years—ye canna lose onny o' them."

First Picnicker: "Isn't this an ideal spot for a picnic dinner?"

Second Ditto: "It must be. Fifty million insects can't be wrong."

OLD TIME JAMES

Taxicab Driver: "Where do you get that 'Home James' stuff? This is a taxi—see!"

Passenger: "Pardon me, my error. Home, Jesse James!"

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